

WISE PAIRINGS: PLANT VEGETABLES AND FLOWERS TOGETHER



**GROW
NUTRITIOUS
CROPS**
— PAGE 36 —

MOTHER EARTH NEWS

THE ORIGINAL GUIDE TO LIVING WISELY
FEBRUARY/MARCH 2015

THE MOST IMPORTANT

SELF-RELIANCE SKILL

IS RECYCLING
WORTH IT?

PREVENT 6 COMMON
TOMATO DISEASES

DIY PASTA-DRYING RACK

PLUS:

- Prep Your Garden for Spring, P. 101
- How to Scale Sustainable Farming, P. 85
- Innovative Solutions to Our Water Crisis, P. 13
- Cooperatively Owned Energy: Power to the People

Our History is Part of Every



1955 Our commitment to energy efficiency dates back to our beginnings, when Home Insulation Company, which would later become Deltec Homes, was created.



1968 Deltec began as a supplier of structures for the resort industry. Many guests inquired about building a Deltec for their main home. Today more than 90% of our business is for the primary residence.



2001 We established a goal to be a zero waste to landfill facility by 2016. Our current reuse and recycle initiatives divert over 80% of our waste from the landfill.

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Home shown: Chesapeake connected to circular garage - heated square footage 1,932



2007 The installation of 273 solar panels enable us to operate our office and production facilities with 100% renewable energy.

2013 Deltec launched the Renew Collection, a series of high performance homes designed to use 2/3 less energy than conventional homes.

2015 Deltec's unwavering commitment to innovation, quality and the environment continues to be an intrinsic part of every home we build.

Circle #21; see card pg 113

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STEVE MAXWELL; COVER: TERRY WILD



ROSALIND CREAMY



JO ROBINSON



BLACK ROCK SOLAR; BELOW: FOTOLIA/RAFAEL BEN-ARI



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The Pitchfork Pulpit: 5 Ways We Can Scale Sustainable Farming

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EarthWords

Ansel Adams

MOTHER EARTH NEWS (ISSN 0027-1535) is published bimonthly, six issues per year, by Ogden Publications Inc.; 1503 SW 42nd St.; Topeka, KS 66609. Periodical postage paid at Topeka, KS 66609, and at additional mailing offices. **Subscriptions:** \$19.95 for one year in the United States and its provinces; \$27.95 per year in Canada and \$31.95 per year foreign, prepaid in U.S. funds. (CANADA GST NBR. 89745 1720 RT0001). **Postmaster:** Send changes of address to MOTHER EARTH NEWS; 1503 SW 42nd St.; Topeka, KS 66609-1265. **Subscribers:** Write to MOTHER EARTH NEWS; 1503 SW 42nd St.; Topeka, KS 66609-1265 or call 785-274-4300 or 800-234-3368. Outside the U.S., call 785-274-4300. **Subscribers:** If the Post Office alerts us that your magazine is undeliverable, we have no further obligation unless we receive a corrected address within two years. To purchase back issues from January 1995 to present, send \$7.50 per issue to MOTHER EARTH NEWS Back Issues; 1503 SW 42nd St.; Topeka, KS 66609. Copyright 2014 by Ogden Publications Inc. All rights reserved. MOTHER EARTH NEWS is a registered trademark. Material in this publication may not be reproduced in any form without written permission. Permission requests must be in writing and should be directed to Bryan Welch; MOTHER EARTH NEWS Permissions; 1503 SW 42nd St.; Topeka, KS 66609. Send story ideas to Cheryl Long at MOTHER EARTH NEWS; 1503 SW 42nd St.; Topeka, KS 66609. Ogden Publications Inc. cannot be held responsible for unsolicited manuscripts, photographs, illustrations or other materials. Printed and manufactured in the United States of America. Publications Mail Agreement No. 40754547. Return undeliverable Canadian addresses to: MOTHER EARTH NEWS, P.O. Box 875, STN A, Windsor, Ontario, Canada N9A 6P2.

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Circle #46; see card pg 113



Join in — Let's Build a Stronger Community

Fostering new ways for us all to connect is one of the things we enjoy most here at MOTHER EARTH NEWS. From our growing online community to face-to-face interactions at the FAIRS, we're thrilled by the many ways we can share the joys of sustainable living. Be sure to take advantage of the following opportunities for networking with people who share your interests and aspirations.

Share photos. Our newest community connector is a page we've set up on the photo-sharing website Flickr, where you can display your best photos of your gardens, homesteads, livestock, home projects, kitchen creations, renewable energy setups, nature and more. We'll feature our favorite pics on social media and on our website—and perhaps even in print! Go to www.Flickr.com/Groups/MotherEarthNewsPhotos.

The FAIRS. There's just no substitute for in-person interaction. We've scheduled five FAIRS for 2015, in North Carolina, Oregon, Wisconsin, Pennsylvania and Kansas. To find more details, download program schedules as they become available, and sign up for the FAIR newsletter, head to www.MotherEarthNewsFair.com.

Facebook. Our page delivers useful advice and lively commentary on a wide range of topics to 1.6 million fans. Plus, to help you share local news and network with your neighbors, we also maintain Facebook pages for each separate state and province. Find your local page at www.MotherEarthNews.com/Facebook.

The Blog Squad. Our blogging network grows every week, and our bloggers frequently share their homestead adventures, recipes, DIY projects and more. Find new posts on our website every day, and reach out directly to bloggers by leaving com-

ments on their posts. If you have skills or knowledge to share, you can apply to be a blogger for MOTHER EARTH NEWS. Learn more about joining our Blog Squad at www.MotherEarthNews.com/Blogging.

Editorial advisory group. We choose the magazine's articles and cover photos with invaluable input from the thousands of you who have signed up to take our online surveys. This survey process tells us exactly which topics are preferred by the largest number of readers, instead of us guessing at what you want to read. You can sign up for our advisory group at www.MotherEarthNews.com/Surveys.



The art of saw-sharpening brought generations together at the 2014 MOTHER EARTH NEWS FAIR in Puyallup, Wash.

Homesteaders of the Year. We want to hear from you about friends, family and neighbors who are thriving after committing to a self-reliant, homesteading lifestyle. For the past three years, we've collected nominations from which we've chosen our annual Homesteaders of the Year. Nominate those you know—or even your own family—by sending us at least three photos and 500 words explaining why your nominee deserves this year's title. You can find our contact information on Page 115; entries are due by March 15. Read about our past winners at www.MotherEarthNews.com/Star-Modern-Homesteaders.

—MOTHER

MOTHER EARTH NEWS
THE ORIGINAL GUIDE TO LIVING WISELY

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MOTHER EARTH NEWS is published by Ogden Publications Inc.,
1503 SW 42nd St., Topeka, KS 66609, 785-274-4300.

For subscription inquiries call 800-234-3368.

Outside the U.S. and Canada, call 785-274-4300; fax 785-274-4305.

Subscribers: If the Post Office alerts us that your magazine is undeliverable, we have no further obligation unless we receive a corrected address within two years.

Printed in the U.S.A.



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Events Near You

Check out our international events calendar to find opportunities to both learn and share self-sufficiency skills in your neck of the woods. Search for events based on location, date and subject matter. Go to www.MotherEarthNews.com/Calendar.



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RISING AT 5:00 A.M. INSOMNIA OR LOVE?

HERE'S TO THE LONE FIGURE IN THE DARKNESS, up before the sunrise, not stopping until the doing gets done. He's the local farmer who fills his neighbors' tables with good things grown from his own soil. At Yanmar, we know what drives him. It's a love for the land, the pride of working it his way — the right way. He's a custodian of the Earth, taking special care to use its resources wisely. For him, Yanmar has built three new tractors — each with a powerful, fuel-efficient engine that handles the toughest tasks and comes back for more. **BECAUSE WHEN IT COMES TO A PASSION FOR THE LAND, HE'S NOT ALONE.**



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“The magazine was hot out of the mailbox when I spotted the recipe for Spicy Eggs with Kale. Dinner plan, done!”



Six single-pot meals stole the show in our December/January issue.



EDITORS' PICK

Wide-Ranging Opinions

My mom subscribed to MOTHER EARTH NEWS the first year it came out, and it has been a part of my life ever since. Your growth has attracted a diverse group of people with varied ideas about life. This has allowed for intolerance and ugly emotions to sometimes show up in your letters-to-the-editor section.

Folks read your articles to learn how to go green and live a simpler life, and to gain hope that others are doing the same. Exchanging constructive ideas is fine; providing a forum for know-it-alls and negatively opinionated thinkers does not fit what I think your mission is. I suggest sticking to education by removing letters to the editor from the magazine.

*Melanie Goforth Hosch
Wirtz, Virginia*

We are committed to sharing our readers' range of viewpoints, even if the conversations are sometimes intense and uncomfortable. Our hope is that such open discussion will be constructive for us all. — MOTHER

If Not in MOTHER, Where?

Don't back off discussions of climate change, organic vs. conventional agriculture methods, water resources, and other environmental matters. They may represent “political” issues for some readers, but they are *real* issues, and if they can't be discussed here, among people who love the

Earth, then where can they be discussed?

I think MOTHER EARTH NEWS has done a great job of not taking sides but still having a dialogue on these critical topics.

*Michael McLane
Roswell, Georgia*

From Page to Plate

Whenever I receive my copy of MOTHER EARTH NEWS, I

always flip through to look at the photos before I read it cover to cover. Well, the magazine was hot out of the mailbox when I spotted the recipe for Spicy Eggs with Kale (“Easy One-Pot Meals,” December 2014/January 2015). Dinner plan, done! It was on the table within an hour and before I had read a single other article. And, oh my—it was

An Ode to Odie, Our Gentle Giant

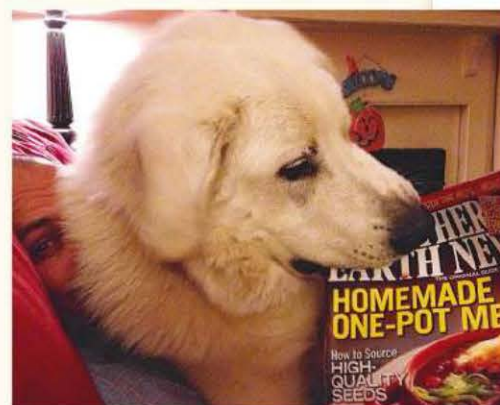
Here's our own steadfast homestead companion, Odie, wanting to read the article about livestock guardians for himself (“Prevent Predator Problems with Livestock Guardians,” December 2014/January 2015). Odie is a rescue dog from our local animal shelter. He's a Great Pyrenees and possibly part German Shepherd.

We are urban farmers, and we have three hens that need to be protected from our neighborhood opossum. Odie walks the fence line all day, making us aware of predators, trains passing through, loud cars, and unwanted dogs and cats.

Your article gave us new ideas as to how we can engage Odie in even more guardian functions on our homestead. To him, we are his flock—my husband, our 5-year-old daughter and myself, along with the trio of hens, a kitten, an adult cat, and a Chinese Crested dog that Odie continues to boss around daily. Because of Odie's presence, we feel safe and confident that nothing will enter our domain as long as he's on guard.

Some people report that Great Pyrenees bark too often, but Odie barks only to let us know if something is out of the ordinary. I have owned many different breeds of dogs, and Pyrs actually bark less than some others do—at least our gentle giant does.

*Sara Davis
Lexington, North Carolina*



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Dear MOTHER

delicious! I will be making this recipe again.

*Sandy Pickard
Stafford, Virginia*

Homemade Deodorant Hack

I was happy to see the article "Back to Basics: Make Your Own Shampoo, Deodorant and Toothpaste" in the December 2014/January 2015 issue. I've been interested in simple-ingredient body care products for some time, and I first made my own deodorant about a year ago using a recipe identical to yours. It turned out great, and I even omitted the essential oils because I do so love the smell of coconut oil.

The only problem was that here in Arizona, the

temperature is often above 76 degrees Fahrenheit, which is the melting point of coconut oil. A short bit of research suggested beeswax could keep my deodorant solid. So now, I use about a half-ounce of pure beeswax melted in with the half-cup of coconut oil. That tweak allowed me to use my home-

made deodorant through the hot summer months.

*Dugan Eckstein
Phoenix, Arizona*

Meat in the Middle

Thank you for your wonderful magazine! I have been reading MOTHER EARTH NEWS

(CONTINUED ON PAGE 106)

Living Small? Share Your Story!

I've spent decades writing about hand-built, unique and tiny homes. The important thing about the tiny home "movement" happening these days is not that all people should be living in tiny homes, but that the size of *new* homes should be getting smaller rather than continuing to expand. The interest in living small is definitely growing: Shelter Publications' book *Tiny Homes* has sold more than 60,000 copies, and, with the recent surge of attention on the subject, it's selling more than 1,000 copies per month. To encourage the shift to smaller houses that aren't necessarily "tiny," our next book will be *Small Homes*, as a small home is a lot more realistic for the majority of people than a tiny home is.

We're inviting MOTHER EARTH NEWS readers to send us photos of and details about their own small homes, or to pass along leads of people living in—or currently building—small homes, so we can potentially include these in our next book. We're looking for homes that are 400 to 1,200 square feet, or thereabouts. (The maximum size of the homes featured in *Tiny Homes* is 500 square feet.) You can send information to SmallHomes@ShelterPub.com. We're planning to publish *Small Homes* in a couple of years.

*Lloyd Kahn
Shelter Publications
Bolinas, California*

You can order the book *Tiny Homes* on Page 97. —MOTHER



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Circle #1; see card pg 113



Innovative Solutions to Our Water Crisis

"If you think the oil wars are bad, wait until the water wars begin."

Ron Jones, president of Green Builder Media, recently made this ominous prediction. With severe drought conditions expanding across the globe, the future he warns of may become a reality more quickly and acutely than we think. In the United States, California, Texas, Arizona and Georgia are on the front lines of the water crisis. As of March 2014, Arizona had just experienced its fourth-warmest winter to date, which caused water shortages across the state; Texas was suffering through the lowest reservoir levels in 25 years; and Georgia had documented years of record water shortages. California's crippling drought has brought the state to its knees, as farmers in the nation's most productive agricultural zone were forced to keep thousands of acres of cropland fallow, and communities across the state risked running out of drinking water.

Fortunately, many innovators are in hot pursuit of these problems. Entrepreneurial companies are experimenting with technologies that can mitigate water crises, and sustainable builders are offering new ways to reduce water use in homes.

WaterFX, a Fresno County-based desalination company, uses solar thermal technology to turn salty, contaminated irrigation runoff into pure water. Its pilot system produces about 14,000 gallons per day for its customers, who are mostly local farmers, and the company has plans to significantly ramp up production to 2 million gallons daily in the next few years. WaterFX says the cost of this clean water (\$450 per acre-foot) is currently more expensive than reservoir water (about \$300 per acre-foot), but that margin could narrow if climate change and drought continue to render reservoir water scarcer and more expensive.

Advances in water purification are encouraging, but residential water conservation also plays a role in meeting water-efficiency goals. Homebuilding company KB Home recently built its first Double ZeroHouse in Lancaster, Calif., one of the most water-challenged areas of the country. This house sits at the intersection of both water and energy efficiency. It's a net-zero-energy building (potentially yielding an electric bill of \$0) that reuses greywater, and saves water with ultra-efficient appliances.



WaterFX's system uses solar energy to turn irrigation runoff into pure water.

Forward-thinking companies can help mitigate water crises via technological advancements.

KB Home estimates that the structure can conserve 150,000 gallons of water each year when compared with a typical home, which is an average reduction of approximately 70 percent. The Double ZeroHouse's sophisticated greywater system first pipes greywater from sinks, tubs, showers and washing machines into a heat-recovery system. As hot water runs through the system, the heat is extracted and used to preheat

fresh water in the tankless water heater. This heat exchange results in about a 30 percent savings on water heating. Next, the greywater is channeled into a collection tank, where it's stored for watering the landscape or garden.

Currently, the greywater system featured in the Double ZeroHouse costs more than \$5,000 when installed in a new home. For it to become market-viable, KB Home estimates that the cost would have to decrease to between \$1,500 and \$2,000, which would likely be achieved by a combination of incentives, rebates and increased demand.

As the cost of water rises, the return on investment for these types of systems that combine energy and water efficiency is becoming more compelling. The triple whammy of dilapidated infrastructure, severe drought and climate change has driven water prices up exponentially in recent years, so implementing creative conservation solutions is not only vital to addressing our water crisis, but also paramount to keeping monthly utility bills affordable for homeowners.

—Sara Gutterman, www.GreenBuilderMedia.com

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New Organic Sweet Corn Variety

AS MOTHER EARTH NEWS reported in its recent article about sourcing high-quality garden seeds (December 2014/January 2015), choosing seeds bred for organic systems is one key to successful organic growing. The Organic Seed Alliance (OSA) works to promote organic seed breeding, and it also participates in breeding projects of its own.

Most recently, OSA teamed up with Martin Diffley, an organic farmer in Minnesota, to develop a new, open-pollinated sweet corn variety named 'Who Gets Kissed?' The breeding project started in 2007, when Diffley went in search of a vigorous, organic sweet corn variety with tolerance to cool, wet soils.

By 2008, he'd embarked on a participatory seed-breeding project with OSA and breeder Bill Tracy at the University of Wisconsin, Madison, to produce a new variety that had these traits. By 2014, the breeders were happy with the result and



Pucker up for 'Who Gets Kissed?' corn, a new, lip-smackingly sweet variety developed for organic growers.

ready to offer seed to other growers. 'Who Gets Kissed?' has vigor, great flavor, sweetness, standability (resistance to lodging, or the stalks toppling over), good germination in cold soils, resistance to common rust and corn smut, and solid yields of large ears with bicolor (white and yellow) kernels.

Seed is available from High Mowing Organic Seeds (at www.HighMowingSeeds.com) and, in concert with OSA's

values and mission, it's open-source, meaning the original breeders encourage farmers and gardeners to save seed from this variety and adapt it to their own growing conditions. This is especially welcome news, because almost all modern sweet corns are hybrids, meaning their seeds can't be saved. 'Who Gets Kissed?' is just the first in a series of open-pollinated sweet corn varieties being created in this collaborative breeding effort.

—Shelley Stonebrook

Compare Solar Prices on 'EnergySage'

The average price for a solar panel has plummeted more than 60 percent since 2010, and installation costs have fallen 40 percent during the same period. If you've been unable to go solar in the past, now is the time to reconsider.

Despite such increased affordability, many people remain unaware of the financing options available for home solar systems, and comparing those options can be confusing. Should you choose a solar loan, solar lease or power-purchase agreement, or buy the panels outright? Now, a new online tool called EnergySage can help clear the air. This one-stop shop has easy-to-understand financing comparisons, as well as the nation's first solar marketplace where installers compete for your business. As the recipient of two U.S. Department of Energy SunShot awards, EnergySage

has been charged with moving the nation's solar industry forward, and it aims to do for home solar power what online tools such as Expedia have done for air travel.

Here's how it works: Input your address, and EnergySage will use aerial views of your home's roof to gauge your solar potential and system cost. If you like the estimate,

you can put it out for bid and receive three to five quotes from pre-screened, certified installers. "The competition means you can expect to pay 10 to 20 percent less than market averages," says EnergySage CEO Vikram Aggarwal. The solar marketplace helps solar installers, too, by matching them with homeowners who want to invest in solar power.

No matter which financing option you choose, your photovoltaic panels will immediately begin paying for themselves through reduced utility bills. "If you buy your system, you'll recover your investment in five to 10 years, depending on your location, and then receive free electricity for 15 to 20 years," Aggarwal says. Head to www.EnergySage.com to educate yourself, shop for the lowest price, and feel empowered to go solar.

—Kale Roberts



Look to EnergySage to find the best deal on home solar installation.

Study Links Autism to Pesticides

Pregnant women who live in close proximity to fields and farms where chemical pesticides are applied experience a 66 percent increased risk of having a child with autism spectrum disorder or developmental delay, a 2014 study by researchers at the University of California, Davis, MIND Institute has found.

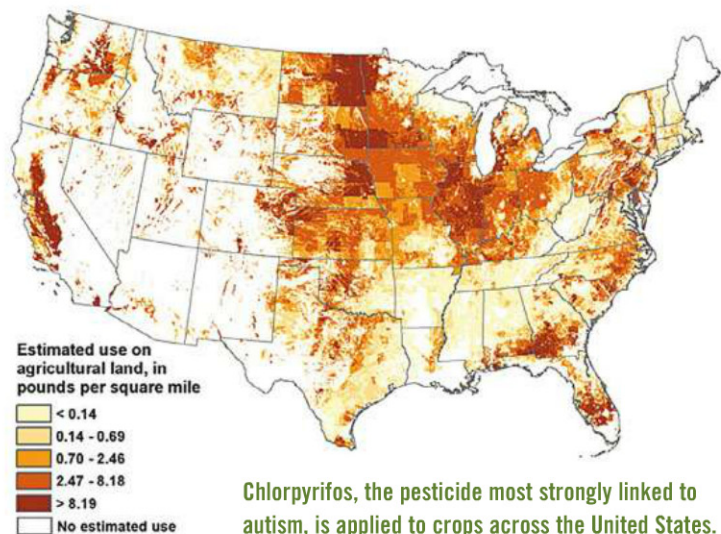
Approximately 200 million pounds of pesticides are applied in California each year. This large study, published in *Environmental Health Perspectives*, examined associations between applications of pesticides during the study participants' pregnancies and later diagnoses of autism and developmental delay in their children. Specific classes of pesticides studied were organophosphates, pyrethroids and carbamates.

For the study, researchers obtained study participants' addresses during their preconception and pregnancy periods. They then overlaid the addresses on maps with the locations of agricultural chemical application sites based on pesticide-use reports, and categorized participants into different zones depending on whether they lived within 1.25 kilometers (km), 1.5 km or 1.75 km of application sites. Associations with children who developed autism or had delayed cognitive or other skills were higher the closer mothers lived to application sites, and lower the farther away they lived.

Different classes of pesticides had different effects. Organophosphates, particularly chlorpyrifos applications during the second trimester, were associated with an elevated risk of autism. Pyrethroids were moderately associated with autism, and carbamates were associated with developmental delay.

Researcher Irva Hertz-Picciotto cautions that we should find ways to reduce pesticide exposure, especially for pregnant women and young children. "We need to open up a dialogue about how this can be done, at both a societal and individual level," she says. To read the study, go to <http://goo.gl/Bu2tFt>.

—University of California, Davis, newsroom

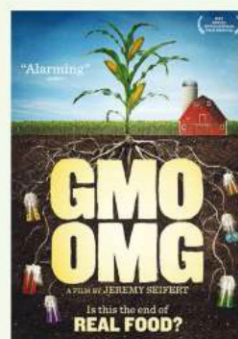


GMOs, OMG

Genetically modified organisms (GMOs) pose many concerns, from the dangerous pesticides and herbicides used to grow them to the genetic contamination of non-GMO crops. These days, though, much misinformation is circulating about GMOs, in part because of the marketing messages from the chemical companies that produce these kinds of seeds, and also because of people on both sides of the debate making claims that haven't been proven. The public needs

more education about this complex topic, and one place to start is filmmaker Jeremy Seifert's 2013 documentary film *GMO OMG*. Seifert starts filming with limited knowledge about GMOs, and then takes viewers on a journey as he and his family investigate multiple facets of genetically altering our seeds and food. At times lighthearted and at times starkly revealing, *GMO OMG* provides insights and interviews from multiple perspectives—from those of farmers to philosophers—about one of our food system's most hotly debated topics. Learn more and find a screening in your area at www.GMOFilm.com.

—Shelley Stonebrook



age and losses to pests. To put this phenomenal food loss in perspective, USDA researchers estimate this amount of food contains 141 trillion calories, which is enough to feed about 175 million people for an entire year! We can't salvage all of this, but surely we can do better. Massachusetts is one state leading the charge in reducing food waste. Since Oct. 1, 2014, frittering away leftover fritters—or any other organic material—has been banned for institutions in Massachusetts

that produce 1 ton or more of food waste per week. That means about 1,700 businesses are no longer allowed to squander leftovers, but must instead donate remaining edible food to those in need, compost

organic waste on-site or at a commercial facility, or use the material to produce electricity via an anaerobic methane digester. Implementation of the new law is part of the state's response to concerns about limited landfill space and reports on the staggering amount of edibles we chuck out in the United States. Massachusetts is also offering tax incentives to encourage the opening of more anaerobic digesters and is providing assistance to affected facilities to help them find a cost-effective—and often, compared with traditional landfill drop-offs, *cost-saving*—option. Although a limit on what can go into the trash versus the compost pile hasn't been set for individual households, the new law is poised to make citizens more aware and help them waste less food, too.

—Jennifer Kongs

Taking a Bite Out of Food Loss

A new report from the U.S. Department of Agriculture (USDA) estimates that more than 133 billion pounds—a whopping 31 percent—of our available food supply goes uneaten each year. This includes "plate waste," spoil-

SOURCE: U.S. GEOLOGICAL SURVEY

"My neighbors laughed when I ordered... now they *ALL* want a garden like mine!"

Introducing a gardening planter that **automatically grows your vegetables for you** – simply, naturally and without any work. **The Award-Winning GrowBox™** combines 45 years of USDA research and University field trials into a patented planter that makes sure your plants thrive – every time, year after year.

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2 Lay the patented Nutrient Patch™ cover on the top and *plant by the numbers.*



3 Add water to the reservoir and... *Watch 'Em Grow!*



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Simple instructions show you when and what to plant. Then **The GrowBox™** automatically adds the right amount of water and fertilizer for you. No guessing, no schedules, nothing to learn. Works perfectly – even for 1st timers.

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Great for busy homemakers, seniors and budget-minded people who want to save money on safe, clean produce. **NEW Organic Fertilizer now available.**

The EASY way to Garden You've been Waiting For.

Enjoy a constantly producing garden anywhere you have sunlight. **Pick FULL-SIZE vegetables and salads daily for months** – then simply re-plant year after year using the same soil.



1 The patented Nutrient Patch™ cover releases premium fertilizer at the right time, properly spaces your plants and keeps the soil warm.

2 Uses simple potting mix for green-house quality results. No weeds or digging. You'll never grow in the ground again!

3 Water constantly moves upwards to the roots. Stores 4 gallons for easy maintenance and it's impossible to over-water.

4 Just plant it and forget it! The indoor/outdoor GrowBox is portable, neat, easy to use and is re-usable for years and years.

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"I own 5 of them and they're the greatest...I am the envy of our neighborhood!"

Ruth M.
Mother Earth News
Magazine subscriber



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The Gardener's Table

Winter's Glowing ROOT VEGETABLES



Brilliant beets and cold-hardy carrots can light up your winter meals.

Story and photos
by Barbara Damrosch

Brightly colored beets and carrots, so nutrient-dense, are mainstays of the gardener's winter diet. You'll find them side by side in cold-weather dishes and in the root cellar as well, although not on the same schedule.

Beet Secrets

Beets are the less cold-hardy of the two. In Maine, we can sow beets around

Aug. 1, nine to 10 weeks before our fall frost date, and still have them mature in the garden before our first hard frost. Temperatures below 26 degrees Fahrenheit are likely to damage them, so out of the garden and into storage they go.

Beets keep well in sealed plastic bags in the refrigerator, or in a dark root cellar with a temperature just above freezing and at about 90 percent humidity. Of all the storage crops, beets are the most likely to lose moisture and become

a bit spongy, but even spongy beets are perfectly nutritious and delicious to eat.

Large storage-beet varieties, such as 'Bull's Blood' and 'Winter Keeper' (sometimes called 'Lutz Green Leaf'), are best to grow for longer keeping, but you might also try 'Chioggia,' an Italian variety with a bull's-eye pattern inside. Golden beets, with their beautiful orange skins and yellow flesh, are popular with some cooks, partly because they don't bleed. They do have a different flaw, however: They oxidize and thus turn brown when cut, especially if grated and used raw. (The Beet and Carrot Boats recipe on Page 22 began as a trio that included grated golden beets, which were gorgeous—but only for a minute.)





1968

Eden Co-op began in
Ann Arbor, Michigan

1975

100% of EDEN grain
and beans certified
organically grown

1988

Eden bans any
irradiated foods

1993

Eden bans all
genetically engineered
food and GMO
derived substances

1999

BPA free lined
cans introduced

47 years later -

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what we set out
to do:

Get the best food
possible, and
make it available
to as many people
as we can.



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'Chioggia' beets, displaying their distinctive bull's-eye pattern, are mild, tender and sweet.

Because raw beets are not tender, serve them raw only if grated or thinly sliced. Grated or shredded beet salads are popular, and you can make canapés from thin beet rounds spread with goat cheese.

Cooking beets is a little tricky, because the nutrients that give them their fine color are soluble in water, which means their nutrients may vanish in boiling water. Roasting works best to

prevent color and nutrient loss and concentrate flavor, and is hands-off cooking time. Pressure-cooking will shorten cooking time and preserve nutrients; medium to large beets need only 12 to 15 minutes. Steaming beets will preserve most of their nutrients and color, too, or you can add beets to soups, such as a hearty borscht—so good on a cold winter night, especially if cooked with kielbasa or chunks of slab bacon.

Chill Out with Carrots

Carrots will tolerate more cold than beets will, and in mild climates, you can simply cover them with hay or straw to protect them during winter, digging them whenever you need them

Beet 'Steaks' with Creamy Lime Sauce

Big beets are a powerhouse vegetable, high in fiber, rich in flavor, and almost meaty, especially after long baking, which softens and caramelizes them without stealing their crimson juices. I often make these big beets the centerpiece of a meal. In this dish, tangy watercress (or arugula, if you prefer) and a tart, creamy dressing balance the beets' sweetness. You could make this dish with smaller beets, but the big ones are so impressive. The crème fraîche in the dressing is available at gourmet and specialty markets, but you can make your own by adding 2 tablespoons of cultured buttermilk to a cup of heavy cream and letting it sit for 12 hours at room temperature. New England Cheesemaking Supply (at www.Cheesemaking.com) sells crème fraîche starter. You can substitute regular sour cream, but the sauce's flavor and tex-

ture won't be quite the same.
Yield: 4 to 6 servings.

2 to 3 large beets, at least 1 pound each
2 cups watercress, loosely packed (about 1 bunch)
1 cup crème fraîche, strained through cheesecloth if a bit runny
1 lime

Preheat the oven to 325 degrees Fahrenheit. Scrub the beets, but don't peel them. Wrap them individually in aluminum foil, then place them inside a covered casserole dish and bake for 3 hours.

While the beets bake, wash the watercress thoroughly and trim off any tough stems. Zest the lime by grating the green part of the skin with a zester, a grater or a fine Microplane. Cut the lime in half and squeeze the juice into a small bowl. Add the crème fraîche and half the zest.

When the beets are done, let them cool enough to handle. Remove the foil and slip the skins off with your fingers. Slice beets crosswise evenly, into half-inch-thick disks, and

arrange on a platter. Tuck the watercress around the beet slices. Sprinkle the remaining lime zest over the sauce, and serve the sauce in a small, shallow dish alongside.



Big beet "steaks" can make a dramatic presentation.

STORE IT! Find lots of ideas for stashing your beets, carrots and other storage crops at www.MotherEarthNews.com/Root-Cellars.



Crisp—and wonderfully nutritious—little boats make a delightful hors d'oeuvre.

Beet and Carrot Boats

Here's a little snack, easy and quick to make, that features both finely grated carrots and beets. Their colors combine as a vibrant contribution to start any winter meal. Your vessels could be individual lettuce leaves from the heart of a butterhead, or single leaves of romaine. My favorite, though, are the tiny canoes you can make from the little pointed heads of Belgian endive—also known as witloof chicory—rendered white, tender and crisp by blanching. My friend Roger Doiron of Kitchen Gardeners International offers a step-by-step explanation of how to blanch endive at <http://goo.gl/8GwdSg>.

If you don't have homegrown endive on hand, you can find

heads in most supermarkets. A smear of mayonnaise in the bottom will hold the boats' cargo in place and act as a dressing. Moor your boats on a plate to pass at a party as hors d'oeuvre, or dock a few alongside a ham and cheese sandwich as a healthy addition to lunch. *Yield: at least 12 boats, or 4 servings as an hors d'oeuvre.*

*1 medium carrot
1 medium beet
4 heads Belgian endive
3 tbsp mayonnaise*

Scrub the carrot, then grate it finely, using either a box grater or a Microplane. Set aside in a small bowl. Wash your utensils and then peel and grate the beet. (These steps can be done ahead of time; if

so, cover the beets and carrots and store in the refrigerator.)

Slice off the bottom quarter-inch of each Belgian endive head to free one or two leaves. Gently remove them and set them aside. Slice off the next quarter-inch to free the next leaves, then repeat to free some more.

When you're done, spread out all the leaves and choose a dozen or more of the nicest ones of a uniform size. (Save the rest, along with the unsliced hearts of the heads, to add crispness to tossed salads.)

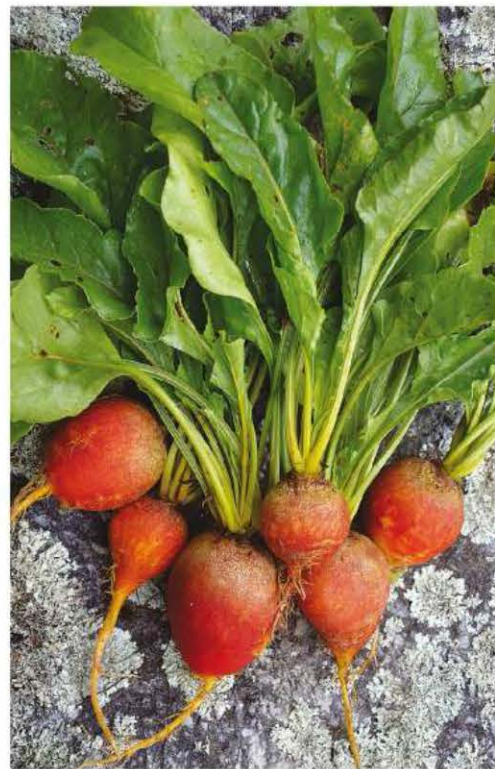
Spread a thin layer of mayonnaise inside each leaf, then load half the boats with carrots and half with beets.

Arrange on a plate or platter and serve chilled or at room temperature.

(as long as the ground isn't frozen). At our place in Maine, we've sown carrots in August—about nine weeks before our first frost—and then stored them right in the ground in a cold frame packed with straw, or in an unheated, plastic-covered greenhouse. Because of our severe winter climate, we add a second layer of protection in the greenhouse—a spun-bonded, polyester floating row cover, held a foot above the ground on wire wickets.

The best part: Carrots will turn candy-sweet after the first few frosts because the cold, in-soil storage will cause their starches to convert to sugars. For us, they are at their absolute finest from November through February, crisp and crunchy and as sweet as orange Popsicles.

You can also store carrots in a refrigerator (in sealed plastic bags) or a cellar, where they will keep for months. If grown in the ground and left there, they will start to regrow in mid-February (sooner in warmer climates), sending out small, furry roots along their



Golden beets: sunny color, mild flavor.



GROW IT!

For more information on growing and storing carrots, see "Learn How to Grow Carrots" at <http://goo.gl/Q7b9nE>.

sides. By the month's end, they'll have begun to lose flavor and sweetness.

If carrots are a favorite with your family, you can avoid a carrot gap by sowing a new crop around the beginning of December in a minimally heated greenhouse, or about a month later in an unheated one or a cold frame. Either way, you'll harvest a brand new carrot crop in March. Just don't sow this spring crop before November, lest the carrots bolt to seed in spring. The best carrot variety for winter harvest is 'Napoli.' For a spring crop, plant 'Mokum' or 'Nelson.' I recommend all three for their excellent flavor.

A bowl of winter-sweetened raw carrots is a familiar sight on our table this time of year. These sugary carrots go with us to potlucks and to meetings (where they trump the coffee cake).

Don't disparage any big, fat, gnarly carrots left in your February cellar. They'll still be full of flavor and fine for roasting, as in the recipe at right. Put them in every stew and alongside every pot roast, pork butt or honey-baked chicken. Or, grate them and mix with a little mayonnaise and some raisins to turn them into a salad or a sunny sandwich filling.

The rich colors of beets and carrots indicate that they're packed with valuable nutrients. Red fruits and vegetables, including beets, are generally rich sources of lycopene and anthocyanins, two important antioxidants. Orange and yellow fruits and vegetables tend to be high in beta carotene, which the body uses to manufacture vitamin A. They're also good sources of folate.

Though the snow may lay thickly atop the garden, these colorful winter storage vegetables will nourish and sustain you quite well. 🌱

Esteemed garden writer Barbara Damrosch farms and writes with her husband, Eliot Coleman, at Four Season Farm in Harborside, Maine. She is the author of *The Garden Primer* and, with Coleman, of *The Four Season Farm Gardener's Cookbook*. Both are available on Page 97.

Roasted Carrots with Garlic

As with most winter vegetables, roasting carrots will sweeten and intensify their flavor as moisture escapes and they shrink.

Any carrots will do for this dish, but I prefer large storage carrots. Coated first with olive oil, they will caramelize beautifully, along with the whole garlic cloves you also toss in, which will soften in both flavor and texture. I like to add fresh rosemary leaves as well, from a pot I bring indoors for the winter. If you don't have fresh rosemary, substitute dried thyme. This is a perfect companion to roasted chicken, beef or pork.

Yield: 4 to 6 servings.

*1 tsp grated nutmeg
1 tsp coarse salt
Generous grating of fresh black pepper
10 large carrots
8 cloves garlic, peeled but left whole (more if they are small)
1/4 cup olive oil
1 tbsp fresh rosemary*

Preheat the oven to 375 degrees Fahrenheit, and then preheat a large roasting pan in it for 5 minutes. (The large size will allow you to avoid crowding the pan, which would steam the carrots.) While the pan preheats, mix the nutmeg, salt and pepper together in a small bowl.

Scrub the carrots, and then trim the tops, re-

moving any green-tinged parts of the roots. Cut them diagonally into large chunks. In the hot roasting pan, carefully toss the carrots and garlic cloves with the olive oil, making sure to coat all the pieces thoroughly. Sprinkle carrots and garlic with the seasoning mixture and toss again until they are uniformly coated. Put the pan in the oven.

After 20 minutes, remove the pan, add the rosemary, and mix everything with a metal spatula, scraping the bottom of the pan to keep the vegetables from sticking.

Roast for 25 minutes more and serve.



Make good use of your big storage carrots in this flavorful side dish.



WISE PAIRINGS

Growing Flowers and Vegetables Together

Plant a profusion of pollen- and nectar-rich flowers among your edible plants to help control pests, boost pollination, and provide eye-pleasing pops of color.

Story and photos
by Rosalind Creasy

In the 1970s, when I was a budding landscape designer, I attended the garden opening of one of my clients. As I walked around anonymously, wine glass in hand, I overheard many guests exclaiming,

“Do you see that? She put flowers in the vegetable garden!”

In the United States, segregating vegetables from flowers still seems like such a hard-and-fast rule that when I lecture on edible landscaping, one of the first things I mention is that I’ve checked the Constitution, and planting flowers in a

vegetable garden is not forbidden. Not only *can* you put flowers in with vegetables, you *should*.

I admit that, in the ’70s, I first intermixed my flowers and vegetables because I was gardening in the front yard of my suburban home and hoped the neighbors wouldn’t notice or complain as long as the



veggies were surrounded by flowers. Soon, however, I discovered I had fewer pest problems, I saw more and more birds, and my crops were thriving.

It turns out that flowers are an essential ingredient in establishing a healthy garden because they attract beneficial insects and birds, which control pests and pollinate crops. Most gardeners understand this on some level. They may even know that pollen and nectar are food for insects, and that seed heads provide food for birds. What some may not realize is just how many of our wild meadows and native plants have disappeared under acres of lawn, inedible shrubs and industrial agriculture's fields of monocultures, leaving fewer food sources for beneficial critters. With bees and other pollinators under a chemical siege these days and their populations in drastic decline, offering chemical-free food sources and safe havens is crucial. Plus, giving beneficial insects supplemental food sources of pollen and nectar throughout the season means they'll stick around for when pests show up.



Short on space? Pack pretty pots with flower and vegetable companions on your patio (above). Play with colors and textures as the author does in her central California garden (left).

Think Integration, Not Segregation

One of the cornerstones of edible landscaping is that gardens should be beautiful as well as bountiful. Mixing flowers and vegetables so that both are an integral part of the garden's design is another key. Let's say you have a shady backyard, so you decide to put a vegetable garden in the sunny front yard. Many folks would install a rectangular bed or wooden boxes, and plant long rows of vegetables, maybe placing a few marigolds in the corners, or planting a separate flower border. In either case, the

ladybug lays her eggs next to the aphids on your violas, the slow-moving, carnivorous larvae won't be able to easily crawl all the way across the yard to also help manage the aphids chowing down on your broccoli.

In addition to bringing in more "good guys" to munch pests, flowers will give you more control because they can act as a useful barrier—a *physical* barrier as opposed to the chemical barriers created in non-organic systems. The hornworms on your tomato plant, for instance, won't readily migrate to a neighboring tomato plant if there's a tall, "stinky" marigold blocking the way.

Not only *can* you plant plenty of flowers amid the vegetables in your home garden, you *should*.

gardener will have added plants offering a bit of much-needed pollen and nectar.

Integrating an abundance of flowers *among* the vegetables, however, would impart visual grace while also helping beneficial insects accomplish more. Plentiful food sources will allow the insects to healthily reproduce. Plus, most of their larvae have limited mobility. For example, if a female lady beetle or green lacewing

Create Cool Combos

To begin establishing your edible landscape, you should plant flowers with a variety of colors and textures, different sizes and shapes, and an overall appealing aesthetic. After you've shed the notion that flowers and vegetables must be separated, a surprising number of crop-and-flower combinations will naturally emerge, especially if you keep in mind the following six guidelines.

① **Stagger sizes.** Pay attention to the eventual height and width of each flower and food plant (check seed packets and nursery tags), and place them accordingly. Tall plants, for the most part, belong in back. They'll still be visible, but they won't block the smaller plants from view or from sunshine. A good rule is to put the



The height of perfection: Shorter feverfew plants play a foreground role to taller zinnias and peppers.

taller plants on the north and east sides of your garden, and the shorter ones on the south and west sides.

2 Consider proportions. A 6-foot-tall sunflower planted next to an 18-inch-tall cabbage would look lopsided. Instead,

place plants of graduated heights from tallest to shortest so your eye will travel naturally from one location to the next.

3 Experiment with complementary colors. Use the hues of your edibles—red tomatoes and peppers, yellow squash

flowers, purple cabbage and basil—as a starting point. Look for flowers that will highlight those shades, such as bright yellows or soft purples, or choose a hue on the opposite side of the color wheel to provide an unexpected pop. For foliage, experiment with different shades of green to give your landscape more depth.

4 Play with textures and shapes. Pair a sprawling squash with more upright basil. Partner thick-leaved plants with those that don't have delicate leaves. Surround a straight-edged tipi of runner beans with a bed of rounded dwarf marigolds.

5 Plant for all seasons. Grow plants with a range of different blooming times so something will always be in flower from early spring to late fall. Not only will this mean a feast of colors to enjoy all year, but, more importantly, it will yield a steady source of pollen and nectar for beneficial insects.

6 View your garden holistically. An ideal landscape draws you in with its

10 Pollen-Rich Flowers for Your Food Garden

I usually choose heirloom annuals because they're versatile and add substance and height to my plantings. Many popular modern flower varieties are short, so they only work well in front of a border. Plus, some modern varieties—sunflowers, for example—have actually been bred for decreased pollen production so they won't shed on your tablecloth. (What a terrible breeding project, from the bees' perspective!) While heirloom flowers tend to work wonderfully in edible landscapes, they're not always conveniently available at the nearest big-box store. Thankfully, several mail-order sources offer heirloom varieties (see "Flower Seed Sources" on Page 28), and these plants are usually easy to grow from seed.

So where should you start? After 40-plus years of creating and evaluating edible landscaping combos, I recommend these common flowering plants that provide pollen and nectar for beneficials, plus a few suggested edible companions for each.

Alyssum. These plants spread along the ground and produce hundreds of tiny flowers that bloom all season. Combine the purple and pink varieties with eggplants and purple varieties of basil, bush beans, lettuce and sprouting broccoli. The white varieties will give a frilly setting for stiff, dark kales, chards, bok choy and red-leafed beets, and fill in nicely between chives, leeks, onions and shallots.

Calendulas. Orange, yellow and apricot calendula flowers brighten cool-season vegetable beds filled with beets, broccoli, bush peas, cabbage, carrots, collards, lettuce, kale and parsnips. The tall heirloom varieties grow to 18 inches and are less prone to mildew than the 6-inch dwarf varieties. Bonus: You can save calendula petals for use in teas and natural body care products.



Tuck petite flowers between plants. Here, bright violas peek up through the big, silver-purple leaves of these cabbages.

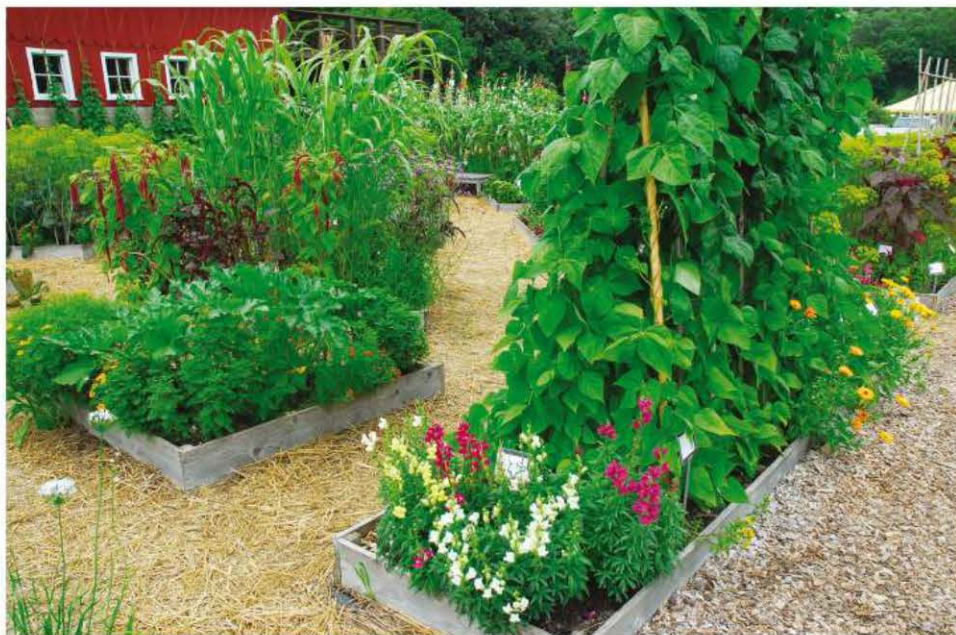
Coreopsis. This endearing plant is a perennial native to the North American prairie that furnishes a seasonful of sunny yellow flowers held well above its foliage. I give these flowering plants a permanent home near the edge of trellises built for beans, cucumbers and tomatoes. Again, I gravitate toward the tall, native variety sold as *Coreopsis grandiflora*, which I typically stake. The shorter varieties work well in small areas near basil, endive, eggplants, kale, peppers and other short edibles.

Cosmos. There are two common types of cosmos: *Cosmos bipinnatus*, the familiar pink and white varieties, such as the old-time 'Sensation' mix, and *C. sulphureus*, which comes in orange, red and yellow. Both attract beneficials and, if you let the flowers go to seed, flocks of yellow finches. I combine the 4-foot-tall 'Sensation' cosmos with artichokes and cardoons, and plant the 2- to 3-foot-tall *sulphureus* varieties, such

diversity, and also with repeating elements, whether those elements are plants, shapes, types of containers or beds, colors, or textures. Browse gardening magazines, books and websites for landscapes you like, and substitute some of your favorite edibles for some of the ornamentals. An article on foliage plants might show a container of ornamental coleus, and that same composition may work just as well if you swap in some crimson chard or curly, chartreuse kale. A feature on flowering vines might inspire you to add scarlet runner beans to the mix.

Pick the Best Blooms

Choosing the right flowers for your space is at once simple and complex. It's simple because there's a lot of research out there about flowers that attract birds, bees, butterflies and beneficial insects. It's complex because dozens of flowers appear on those lists, and pinpointing the ones that will work best in your climate and with



The display gardens at Seed Savers Exchange in Decorah, Iowa, give prominence to plenty of flowers.

your vegetables and your overall garden design may take some time.

Keep in mind that different insects are attracted to different flower characteristics, such as color, scent and blossom shape. The more diverse range of flowers you of-

fer them, the more diverse the insect population in your garden will be. Try some plants in the daisy (*Asteraceae*) family, such as black-eyed Susans, coneflowers, cosmos, marigolds, sunflowers and zinnias. Also consider the parsley (*Apiaceae*)

as 'Diablo,' in front of tomatoes and okra, and next to trellises of cucumbers and beans.

Echinacea. A native plant prized for its healing properties and a favorite with bees, this perennial forms clumps of upright leaves and pink-purple, daisy-like blooms off and on all summer. The plant can grow to 4 feet tall and comes in numerous varieties. I plant echinacea at the end of mixed vegetable-and-herb beds, and combine the plants with tall herbs, such as dill, fennel, lovage and sage.

Marigolds. These annual flowers come in shades of yellow, orange and reddish-brown, and bloom from spring through fall. The tall, older varieties grow to 4 feet, and I use these in front of a trellis full of tomatoes, beans, cucumbers and other climbers. The dwarf marigold varieties range from 6 to 18 inches, and these are ideal for creating a compact flowering hedge to border a bed of bush beans or peppers, for interspersing among kale and other greens, and for surrounding a squash plant or two. My favorite dwarf marigolds are the 'Gem' series, which have fine, citrus-smelling foliage and small edible flowers.

Sage. The stately sages, such as 'Victoria' and other non-edible natives, bear spikes of either red or blue flowers that are especially enticing to bees and hummingbirds. Varieties range from 18 inches to 3 feet tall. While some are perennial, some native sages common

to home gardens are often treated as annuals. Interplant them with okra, tall pepper varieties and shorter tomato varieties.

Sunflowers. These cheerful, towering plants attract many beneficials and several varieties offer edible seeds for you, too. Some varieties reach 8 feet and pair well with a patch of corn or behind a planting of large winter squash. The dwarf varieties can be used behind large zucchini plants or a bed of bush beans or soybeans.

When choosing varieties, skip any that have been bred to produce little or no pollen.

Violas. You can really paint your garden with this family of edible, cool-season annual flowers. Violas come in a pleasing palette of purples, blues and yellows, and their whiskered, up-facing, flat blooms make perfect fillers among members of the cabbage family (see photo, opposite). They can also accent a geometric bed of lettuces and shine in colorful containers.

Zinnias. Butterflies adore the blooms of this family of annual flowers, which come in an array of sizes and colors, making them suitable for almost any vegetable combination. Try the dwarf 'Mexican' varieties in a bed of chiles, and pair the tall, pastel varieties with artichokes, Brussels sprouts or fennel. Edge a planting of edamame with a mix of dwarf zinnias, and combine these petite varieties in a large container with a mix of basil plants.



Mix contrasting colors, such as bright green summer squash, orange marigolds and purple basil.



Clockwise from left: Runner beans, basil and yellow zukes are centerpieces to colorful borders of marigolds, zinnias, portulaca and geraniums.

family, especially carrots, cilantro, dill and parsley; the mustard (*Brassicaceae*) family, including nasturtiums and sweet alyssum; and the mint (*Lamiaceae*) family, with basil, sage, Victoria salvia and, of course, mint. For a much more comprehensive list of insect-coaxing flowers, see “The Best Plants to Attract Beneficial Insects and Bees” online at <http://goo.gl/YK3YcT>.

Plants native to your area will naturally attract the insects and birds vital to your ecosystem, so seek out native plants. Try heirloom flowers, too, as they’re often packed with nectar and pollen, and some are wonderfully fragrant. If choosing modern hybrids, look for varieties with those same characteristics. For more flower choices, see “10 Pollen-Rich Flowers for Your Food Garden” on Page 26.

After you’ve enticed plenty of beneficial insects and birds to your garden, you’ll want to keep them there. To do so, first place shallow water sources, such as small birdbaths, around your garden. Second, allow flowers to grow and spread to provide shelter. Third, don’t be too quick to clean things up. Let a few of your herbs, such as basil and parsley, and vegetables, such as broccoli and lettuce, mature to their flowering stage to attract insects. Finally, trust nature to keep things in balance rather than jumping in with controls and chemicals. Be patient, allowing the interactions among flowers, insects and crops time to play out.

I’d like to say that I had an “Aha!” moment when I realized how effectively and elegantly all of this worked. Actually,

though, it took a while before I finally understood that, when it comes to flora, what we compartmentalize as “edible” and “ornamental” are in fact an interconnected system, and if you take out the flowers, you’ve removed a critical part. Growing flowers and vegetables together isn’t just a pleasing way to garden—it’s an essential way to garden. 🌱

Ros Creasy has been cultivating stunning plant combos for 40 years. She coined the term “edible landscaping,” which is now common lingo in the gardening world, and even penned the book *Edible Landscaping* (available at 25 percent off until March 31, 2015; see Page 97).



PLAN YOUR PLOT!

Map out your garden with effective edible-landscaping combos using our *Grow Planner* app, which we’ve just released in an updated version with a sleek, new design. This app, now available for iPhone and iPad, puts growing guides, crop spacing requirements, planting dates for your exact location, and more planning tools right at your fingertips. Go to www.MotherEarthNews.com/Grow-Planner.

FLOWER SEED SOURCES

MOTHER’s Seed and Plant Finder: Locate sources for specific flower varieties at www.MotherEarthNews.com/Custom-Seed-Search.

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Renee’s Garden Seeds: www.ReneesGarden.com

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The Most Important SELF-RELIANCE SKILL EVER

Put into practice these six habits to master the true make-or-break homesteading skill: getting the right work done, the right way.

By Steve Maxwell

In October of 1986, I cut through a tumbledown wire fence and drove my old pickup truck onto the rural property I'd just bought with my life savings. I was a 23-year-old dreamer back then, with a desire to live in the country by the labor of my own hands. I'm now living that dream and thriving on that same property along with my wife, Mary, and our five kids. We built our own house,

and we enjoy food, fuel and beauty from our land. We're blessed to see the next generation setting up their own self-reliant homestead on our family acreage.

Few other dreamers I've known have managed to fulfill their ambitions. In my experience, most dreams don't die because of a lack of passion or practical homesteading skills, but instead become casualties of the failure to get enough of the right kind of work done. Bills pile up, gardens don't get planted, roofs continue to leak, enthu-

siasm wanes. The cause of these problems often goes unrecognized until passion is cold, relationships frazzled and finances exhausted. Knowing how to work efficiently on a homestead where you are your own boss requires a specific skill set that contrasts sharply with the skills needed to work a traditional office job. I've worked for wages and now I work from home on my own land, and the two experiences are entirely different. If your goal is to be in charge of your own successful modern

**The author's family
hand-built this
handsome home
on their rural
Ontario acreage.**





Steve and Mary Maxwell started out small in 1986 as self-reliant dreamers—with big goals.

homestead, you must learn *how* to work, which is just as important as learning practical skills. Put into practice the following six homesteading habits to help you get the right work done in the right way, and you'll bring the satisfaction of self-reliant living one big step closer.

1 Set Guiding Principles

A homesteader without goals is like a ship without a rudder. You may be sailing,

but you won't end up where you want to go. You need to decide at the outset what kind of lifestyle you want. For us, it came down to three main guiding principles: Earn all family income without leaving the property, raise our kids with us at home, and provide for as many of our basic needs as possible from our own land and labor.

Determine your own principles, and let them be the rudder that guides your voyage toward self-sufficiency. Use them to

set long-term goals, broken down by year and month—being specific will help you figure out what you need to accomplish each day in order to achieve those goals and live in line with your principles.

2 Follow a Disciplined Schedule with Rest

No boss, no outside schedules, no imposed deadlines—these are some of the attractions of working from home, but they're also likely to contribute to failure. Not having a boss means your success will depend almost entirely on how well you determine what must get done. When setting your own schedule without imposed deadlines, you'll thrive only if you fill your day with productive activities. Self-reliant living is really about responsibility.

So why bother with self-reliance if it doesn't get you out of work? The satisfaction of gaining directly from your own efforts is one reason. This connection between productivity and benefit is one of the things I like most about my modern homestead. Plus, completing many of the wide variety of homestead tasks alongside

A Day in the Life

My day starts at about 7 a.m., when I either work on digital projects or hands-on jobs, such as fixing machinery, tending cattle and fences, or working in the garden. My wife, Mary, is a full-time homemaker. She has lunch ready for the family at noon, and then I go back to work until 6 p.m. Lately, I've spent my afternoons cutting and splitting firewood, and helping my son build his own house for him and his wife. The kids handle cleaning up after supper, so Mary and I are free to walk with our dog along a forest trail for a couple of miles. It's quite a treat to hear whippoorwills sing while a full moon rises through the trees. As I write this article, my to-do list includes putting the garden to bed; completing a promotional video and website for a local marina; helping one of my sons finish a simple, portable chicken coop he's building; picking some apples for Mary to use for a pie bee that she's participating in with friends of hers; extending the watering system on our cattle pasture; and working on my websites with my digital assistants, Mike and Kristena, who live 400 miles away.

This is a general pattern of our day-to-day work for six days a week. We don't work beyond the essential chores on Sundays. The variety of a homestead workweek makes it so much nicer



Steve shows his son Jake how to properly use a lathe in his on-farm workshop.

than hourly paid work, at least for me. I look forward to Mondays just as much as I do Fridays, and I'm excited to get out of bed each day. Our carbon footprint is smaller than it would be otherwise, because we don't travel for work, we heat with wood, and we make, reuse and repair a lot of what we need. This isn't the life for everyone, but it certainly is for us.



Robert Maxwell (above) learned from his father, Steve (right), that having the proper tools and the dedication to get work done are vital to keeping their tractor running and their gardens mulched.

family and friends makes work more like serious play.

Day-to-day living on a successful modern homestead starts with a schedule that includes eight hours of constructive work each day. You'll probably want to work longer, because your work will be fulfilling. But all work and no play isn't sustainable either. The older I get, the more I value setting aside a day of rest. We work hard for six days, and then relax and enjoy the fruits of our labors on the seventh day.

3 Do the Right Work

Today, we have easy, unprecedented access via the Internet to the information

needed to create a thriving homestead lifestyle. You can pick up almost any self-reliance skill imaginable, learn how to work from home, and establish international connections with like-minded folks online, which makes the Internet an invaluable tool for the modern homesteader. You'll need many more tools, of course, but the Internet is crucial—I'm sure our homestead life would never have succeeded without it.

All that said, even essential how-to information is wasted if it's not applied to the tasks that matter most. That's why you must prioritize where you invest your efforts. The best way to do so, I've

found, is to make—and use!—lists. In the evening, write down everything that needs doing the next day based on your predetermined goals for the following week and month.

Don't let personal preference for certain jobs delay you from tackling what you know should be high-priority items, and don't worry about items on the list you aren't getting to yet. Just be sure you get to them later, after you've handled the immediate to-dos.

4 Work the Right Way

Having the proper tools to work efficiently will make a huge difference.

Making Ends Meet

When my wife and I began in the mid-1980s, our plan was to work from home by building furniture and running a pick-your-own berry farm. That began to change when my interest in writing led to my first published article in 1988. Today, I earn most of my income from creating articles, blog posts and videos about woodworking, construction and power tools. I do business from the shop and studio I built on our property. We still grow berries and work with wood, but it's usually for our own use, with cash coming in mostly from digital projects.

What will you do to make ends meet on your homestead? Whatever it is, make it an extension of your interests and aptitudes, and include the Internet as part of the mix. The Internet can enhance any business, and few rural areas have the population to support small businesses that don't also have a digital outlet.

Farmer friends of mine are using the Internet to market their high-quality beef to urban markets. A young mother I know makes exquisite chocolates in the commercial-grade kitchen she set up in her country home, and then sells her confections online to consumers across the continent. Living in a remote geographic location often creates a big challenge for rural homesteaders trying to earn money at home, and the Internet helps remove that barrier.



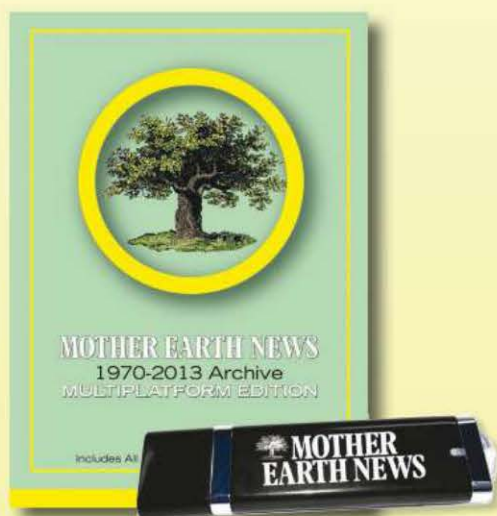
Joseph Maxwell shows off a bountiful raspberry harvest from when the family sold commercially.

STEVE MAXWELL (2); TOP RIGHT: JOSEPH MAXWELL

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Setting goals—and meeting them—are the keys to turning a stand of young trees into a thriving orchard and a passel of piglets into plenty of pork.

Doing work in the right way means equipping yourself the way a professional would, not as a hobbyist would. You probably won't be able to buy professional-grade tools and gear right away, but work toward it.

You can also buy or rent equipment to share with a group, hire your neighbor who owns a tractor to till your garden, barter labor for a side of beef, or trade work for the opportunity to borrow a wood splitter until you can build your own collection of equipment. Aim to become not a jack-of-all-trades, but a well-equipped master of most self-reliance skills. It's a long-term goal that will set you up for lasting prosperity.

5 Carry a Notepad

Pound for pound, my notepad and pen are the most valuable physical tools I own. They're always with me to catch the little thoughts that waft through my head throughout the day: "Buy 5 pounds of 4-inch deck screws," "Call Rob about shingle order," "Take photo of spiders in pasture for blog," "Harvest garlic." This habit prevents me from letting tasks that need doing escape my memory, neglecting details, and wasting trips to town by forgetting to buy all the items I need.

Whether you use a smartphone, tablet, or simple paper pad, as I do, recording crucial details that come up during each workday will be vital because it will ultimately boost efficiency.

6 Work Efficiently and Avoid Distractions

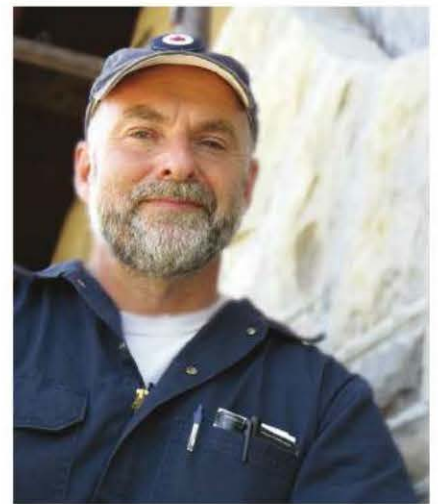
An old-timer I know tells a story of how things used to be in the countryside where he grew up during the 1930s: "We were dirt-poor, but everyone managed to keep their barns repaired and houses painted. Nowadays, people sit inside watching satellite TV or YouTube while their places fall apart around their ears."

The most spectacular homesteading failures I've seen all involve people who talk a lot and move slowly. While the Internet is an essential homesteading tool, it's also full of distractions that turn people into spectators and consumers rather than participants and producers. No responsible boss would allow you to watch television, play games or socialize online while you're on the clock. What you might not realize is that, when working from home, your homestead can actually fire you. When your garden doesn't get tilled in time and your woodpile is too small come November, the homestead will hand you a pink slip—and it will be at least as shocking as the regular kind. You're free to indulge in these distractions during the workday, but they could cost you your dreams of a self-reliant, hands-on life. They probably will.

Simply moving quickly as you walk around and perform tasks can significantly add to your productivity. Don't run about frantically, but rather work efficiently and be deliberate and focused. After picking up the pace becomes a

habit, productive work will become the new normal—and you'll thrive.

Learning the practical nuts and bolts of hands-on living is vital, and just as imperative is mastering the six homesteading habits detailed here, which will keep you working efficiently and effectively. In my experience, *how* you work will be the most critical part of making your dreams of successful self-reliant living your reality. 🌱



Steve Maxwell, shown here with his handy pen and notepad, is a self-dubbed "backwoods peasant" who connects digitally with a worldwide audience to share his homesteading and DIY expertise. He lives with his family on Manitoulin Island, Ontario. Follow him at www.SteveMaxwell.ca.

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Grow These NUTRITIOUS CROP VARIETIES

Take your homegrown foods to a new level by choosing the fruit and vegetable varieties richest in health-promoting phytonutrients.

Story and photos by Jo Robinson

I've spent the past 10 years scouring scientific articles for information on the most nutritious fruit and vegetable varieties in our modern world. So far, I've pinpointed hundreds of stellar choices. The health benefits of eating these specific varieties range from lower risk of cardiovascular disease and cancer—the top two causes of death in the United States—to boosted energy and a more radiant complexion. You might even live longer. Studies suggest that eating *the most nutritious varieties* of fruits and vegetables may have a bigger impact on our health than *how many* fruits and vegetables we consume.

For example, in a study published in the *Journal of Nutrition* in 2013, participants 65 years of age and older who consumed highly nutritious fruit and vegetable varieties during a 12-year period had a 30 percent lower mortality rate compared with those who consumed less-nutritious varieties.

Phytonutrient Power

The reason some varieties of fruits and vegetables are more protective of our health than others, according to 21st-century science, is that they are rich sources of molecular compounds called “phytonutrients.” *Phyto* means “plant” in Greek, and plants produce *phytonutrients* to protect themselves from diseases, fungi, insects, harmful ultraviolet light, drought and other threats. When we eat plants rich in phytonutrients, we receive health benefits, too—the plant's self-protection becomes our protection.

Decades ago, the prevailing stance among nutritionists was that phytonutrients were of no benefit to human health. This old viewpoint has been flipped on its head, however, and some scientists, including Rui Hai Liu, a professor in the Department of Food Science at Cornell University, now maintain that the majority of the health benefits we



The author grows the most nutrient-dense fruits and vegetables in her garden on Vashon Island, Wash.

get from eating fruits and vegetables come via their phytonutrient content—not from their more often-credited vitamins, minerals and fiber.

You can find some phytonutrient-rich fruits and vegetables in supermarkets and farmers markets. Home gardeners are in an enviable position, though, because we can fill our plots with the most healthful varieties. Happily, because many of these choice plants are disease-resistant as well as nutritious, they're often ideal for organic growing. One of my favorite examples of this is the 'Liberty' apple, which was released to the public in the 1970s by the New York State Agricultural Experiment Station. This apple has two to three times more phytonutrients than most supermarket varieties, and it's crisp and juicy, with a good balance of sweet and tart. The 'Liberty' tree is also wonderfully productive and highly resistant to apple scab and fire blight, two destructive apple diseases. Last year, my 'Fuji,' 'Gravenstein' and 'Northern Spy' apples were covered with scab, but the fruits on my 'Liberty' tree remained pristine (see photo, bottom right).

Appetizing Allies

Most phytonutrients are potent antioxidants, which help protect us from tiny particles called "free radicals." We generate free radicals when we breathe, eat, exercise, fight disease, or are exposed to toxic substances. We can't avoid free radicals, and, when kept in balance, they can be beneficial. In excess, however, they can turn a normal cell cancerous, promote chronic inflammation, contribute to the blockage of our arteries, or destroy vital neurons in the brain. Fortunately, phytonutrient-rich foods have such potent antioxidant activity that they can limit the damage free radicals cause.

Some phytonutrients do more than provide antioxidant protection, however. In a 2009 test-tube study published in the *European Journal of Pharmaceutical Sciences*, the phytonutrient quercetin, which is present in apples and onions, killed a flu virus more effectively than the prescription drug Tamiflu. The lycopene in tomatoes has been linked with an improvement in male fertility (*International Urology and Nephrology*, 2002).

A number of phytonutrients, including the catechins in green tea and the flavanols in dark chocolate, have been shown to improve the way our cells handle insulin, which reduces the risk of obesity and diabetes.

Color is sometimes a clue indicating the phytonutrient content of fruits and vegetables. A few red-fleshed foods, including tomatoes, red papayas and watermelons, contain lycopene. Most dark-green leafy vegetables are rich in lutein, which supports eye health. Many phytonutrients are colorless, however, such as the quercetin in onions and apples.

Variety Matters

The growing evidence that some varieties of fruits and vegetables provide far more health benefits than others do has far-reaching implications. In addition to choosing so-called "superfoods" for our diets—kale, garlic, pomegranates and so on—we should be looking for "super varieties" as well. Spinach, for example, is widely regarded as a superfood. But which variety you choose matters. In a 2006 study from the *Journal of Agricultural and Food Chemistry*, half the participants were asked to eat five small servings of the 'Spinner' variety of spinach each week for three months. The other half consumed the same amount of the 'Springer' variety, which has fewer phytonutrients. Tests showed that those who consumed the higher-phytonutrient 'Spinner' had a reduced risk of macular degeneration, which is a leading cause of blindness in adults 65 years of age and older. The people who were given the low-phytonutrient variety received no such benefit.

How can you know which varieties to choose? On Page 38, you'll find a list of some of

the most healthful fruit and vegetable varieties you can plant in your garden or orchard. Each has been tested for phytonutrient content by an independent lab, with the findings then published in well-regarded scientific journals. (I reference more than 100 additional varieties in my book *Eating on the Wild Side*, which is available on Page 97.) In addition to this list, let the following four general guidelines help steer your choices.



From top: Anthocyanin-rich 'Graffiti' cauliflower and 'Purple Passion' asparagus; the 'Liberty' apple (right) is scab-free.

① Heirloom isn't always better.

Modern agricultural trends have resulted in fruits and vegetables that are bigger, sweeter, more productive, and easier to store and transport. Unwittingly, these breeding processes have stripped crops of many phytonutrients. The classic, red-leaf Italian lettuce 'Lollo Rosso,' for instance, has 10 times more phytonutrients than green-leaf lettuce and 600 times more than modern iceberg lettuce.

Not all heirloom fruits and vegetables are richer in phytonutrients, though. A case in point is the 'Sultana' seedless grape, which grew in the Ottoman Empire hundreds of years ago, making it an ancient heirloom. Today it's known as the 'Thompson' seedless grape, and it has become one of the most popular varieties in the United States. Lab studies show that some other grape varieties created within the past 50 years have up to five times more phytonutrients than 'Thompson.' Bottom line: Older heirlooms are not necessarily more healthful.

② **Choose small-sized varieties.** Many seed catalogs highlight varieties that are "extra-large" or "gigantic." You'll see on-



Top to bottom: 'Sweet Charlie' strawberries are bursting with antioxidants, and 'Juliet' cherry tomatoes contain lots of lycopene.

ions weighing more than 2 pounds, blueberries bigger than quarters, and "humongous" tomatoes that clock in at up to 3 pounds.

These super-sized foods are problematic for a number of reasons. First of all, they contain more water per ounce, which reduces their nutrient density and dilutes their flavor. Second, they have less skin per ounce, and phytonutrients are most concentrated in the skin of plants. The lower the skin-to-flesh ratio, the less pronounced the crop's health benefits.

I'm a big fan of the small 'Rubel' blueberry. A 2001 study published in the *Journal of Agricultural and Food Chemistry* revealed that 'Rubel' packs more phytonutrients per ounce than 86 larger varieties of the same blueberry species. I don't mind the extra

time it takes to pick a pint, because the nutrient-dense berries have such a delicious, intense flavor.

③ **Intense flavors are better.** Compared with those of many other countries, the fruits and vegetables widely cultivated in the United States are relatively mild-tasting. Iceberg and romaine are two of our favorite lettuce types, whereas the Italians revel in ra-

44 Super-Nutritious Varieties for Your Garden

Alliums

'Spanish Roja' garlic, like all garlic varieties, is a source of allicin, which can reduce the risk of cancer and cardiovascular disease. This hardneck garlic is intense and spicy.

'Southport Red Globe' onion is an heirloom and excellent keeper that provides anthocyanins and quercetin.

'Bonilla' shallot provides, as all shallots do, more antioxidants than onions. Grow from seed and harvest the same year.

Apples

'Akane' is rich in phytonutrients. This Japanese variety is disease-resistant and a satisfying blend of sweet and tart.

'Bramley's Seedling' contains three to four times more antioxidants than common varieties and is resistant to scab and mildew. This large, late-season apple deserves to be grown more widely.

'Liberty' has two to three times as many phytonutrients as typical varieties, and is

resistant to apple scab and fire blight. The flavor is a balanced blend of tart and sweet.

'Northern Spy' has nutritious skin and flesh and is a good keeper that's popular for pies. This 19th-century heirloom ripens for late-season harvests.

Asparagus

'Jersey Knight' is more healthful than most other green asparagus varieties.

'Purple Passion' is rich in anthocyanins. For maximum sweetness and health benefits, eat asparagus within one day of harvest.

Berries

'Wild Treasure' blackberry has high antioxidant activity. This prolific, thornless blackberry is tart and sweet, and is a cross between a wild trailing and an upright domestic variety.

'Elliott' blueberry provides more anthocyanins than most blueberry varieties. This large, late-season blueberry has great flavor.

'Rancocas' blueberry is a flavorful, medium-sized berry that's rich in anthocyanins.

'Rubel' blueberry is one of the most nutritious blueberries. Smaller and intensely flavored, it's a semi-wild blueberry.

'Caroline' raspberry contains nearly as many cancer-fighting antioxidants as the average blueberry. These disease-resistant berries ripen in June and then again in August, and are preferred by many chefs.

'Ovation' strawberry provides two times more antioxidant protection than most strawberry varieties. Larger than 'Sweet Charlie,' this late-maturing strawberry variety helps extend the season.

'Sweet Charlie' strawberry is higher in antioxidants than most other strawberries, and is ready to harvest mid-season.

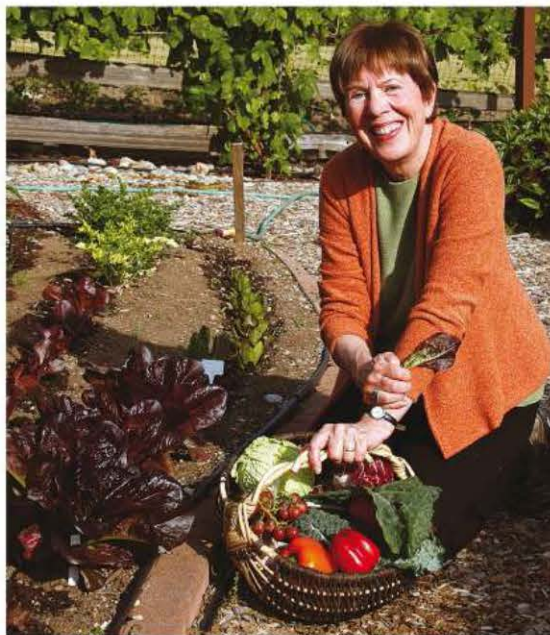
Carrots

'Deep Purple' is the richest in anthocyanins of all purple carrots. It's purple throughout, so serve with orange carrots for contrast.

dicchio and arugula—sharply flavored greens that contain far more antioxidants. Sweet and mild onions have become our most popular options, yet stronger-flavored yellow and red onions are more beneficial to our health.

The reason that bold is often better is that some of the most beneficial phytonutrients have a bitter, astringent, spicy or tart flavor. We've bred these qualities out of much of our domestic produce at the same time that we've increased that produce's sugar content. When choosing fruit and vegetable varieties for your garden, experiment with varieties that have more sass.

④ Choose red, purple, black, or blue fruits and vegetables. Varieties that fit this color scheme are rich in anthocyanins, a family of phytonutrients that has been linked to a broad range of health benefits. Anthocyanins have been shown to block inflammation, lower blood pressure, lower LDL (bad) cholesterol, and even help preserve memory in people with early-stage dementia. Anthocyanin-rich foods include most berries; red-skinned apples; red and black grapes; red cabbage; red onions; purple asparagus; purple broccoli; purple cauliflower; red, purple and black sweet peppers; and red and black kale.



The author, Jo Robinson, pauses to pick phytonutrient-rich crops from her beautiful, bountiful garden.

In the United States, we used to eat far more anthocyanin-rich berries than we do today. We now consume, on average, only 2 tablespoons of fresh berries per week. Knowing what I now know about phytonutrients, I live on berries. I grow blueberries, strawberries, raspberries, cranberries, marionberries and a high-phytonutrient blackberry variety called 'Wild Treasure.'

This year, why not add some of these outstanding varieties to your garden to enjoy the benefits of phytonutrient farming? You can find sources for these varieties via MOTHER'S Seed and Plant Finder at www.MotherEarthNews.com/

Custom-Seed-Search. Many of the varieties mentioned in the list below are relatively rare, so order early to ensure availability. 🌱

Jo Robinson is a journalist who has spent years researching and growing extra-nutritious foods. An expert on grass-fed meat, she is the author of *Pasture Perfect*, which, along with her latest bestseller, *Eating on the Wild Side*, is available on Page 97.

'Cosmic Purple' is sweet and extra-nutritious.

It's purple with an orange core.

'Purple Haze' is a Nantes-type carrot that's purple with an orange core.

Corn

'Ruby Queen' is a super-sweet, red variety that, unlike white and yellow corn, provides anthocyanins.

Crucifers

'Packman' broccoli is an extra-nutritious, green variety, for which seeds and starts are widely available. After you harvest or purchase broccoli, keep cold and eat within 24 hours to maximize your health benefits.

'Purple Sprouting' broccoli is rich in anthocyanins and cancer-fighting compounds. Pick the small heads that come back after the first harvest. This variety is great for supplying a fresh broccoli harvest for months.

'Graffiti' cauliflower is a purple, large-headed variety rich in anthocyanins and cancer-fighting glucosinolates. For optimum nutrition, eat cauliflower raw or lightly steamed.

Grapes

'Concord' is a blue grape that may lower blood pressure and enhance memory in people with early-stage dementia. A seedless version of this variety is now available.

'Glenora' is a black, seedless grape that's rich in anthocyanins and ripens early.

Salad Greens

The 10 top varieties are 'Blackjack,' 'Cocarde,' 'Concept,' 'Four Seasons,' 'Lollo Rosso,' 'Merlot,' 'Prizehead,' 'Radicchio di Treviso,' 'Red Iceberg' and 'Red Oakleaf.' The most healthful choices are red loose-leaf varieties, followed by green loose-leaf varieties with a brown or reddish fringe.

Potatoes

'All Blue' has blue skin and flesh and is rich in anthocyanins.

'French Fingerling' contains 50 times more antioxidants than the common, white 'Kennebec.' This disease-resistant potato has red skin with cream-colored flesh.

'Mountain Rose' has antioxidant content similar to that of 'French Fingerling,' but this versatile, red-skinned potato has a reddish-pink interior.

'Purple Peruvian' provides more anthocyanins than any other potato. This heirloom from Peru dates back 1,000 years and has purple skin and amethyst-purple flesh. It comes in lumpy shapes and variable sizes.

Tomatoes

'Gardener's Delight' is a bite-sized cherry tomato with a great texture that's ideal for adding to salads and sandwiches.

'Indigo Rose' has anthocyanins and lycopene. This small, stunningly black tomato is late to ripen. Harvest when bottoms turn red.

'Juliet' is a large cherry tomato that's high in lycopene, tastes sweet, and is easy to dry.

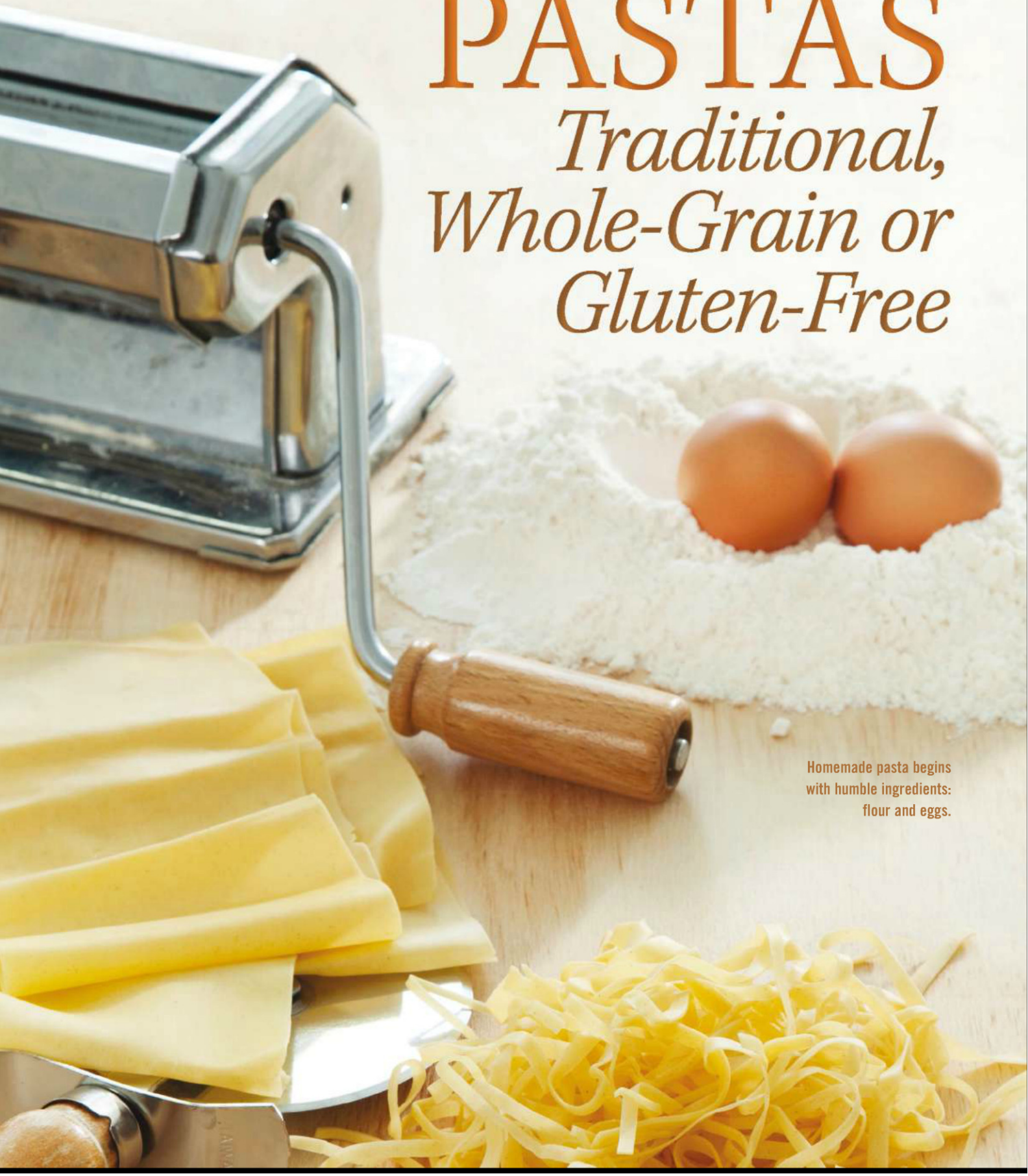
'Matt's Wild Cherry' is a small, wild cherry tomato that was discovered in Mexico. This flavor bomb is high in lycopene and rangy in growth.

'Sugar Lump' is a sweet and nutritious cherry tomato that's high in lycopene.

MAKE YOUR OWN PASTAS

*Traditional,
Whole-Grain or
Gluten-Free*

Homemade pasta begins
with humble ingredients:
flour and eggs.



Fresh pastas are so easy to make that you can enjoy homemade noodles any time.

By Domenica Marchetti

My Italian-born mother made fresh pasta often when I was growing up. I would stand across the kitchen counter and watch as she fed strips of supple dough through her hand-crank pasta roller and then cut them into noodles—wide lasagna, long fettuccine, or square-cut *maccheroni alla chitarra*, a specialty of her native Abruzzo.

It was once thought that Marco Polo “discovered” noodles during his travels through China. But evidence suggests that pre-Roman Etruscans were making a form of pasta using ground cereals and grains mixed with water. The Romans enjoyed a wide ribbon-like pasta called “lagane”—the precursor to lasagna—as early as the first century.

The history of pasta in the United States is almost as old as the nation itself. Thomas Jefferson, who traveled to Italy in 1787, shipped a pasta machine from Naples and served macaroni (the English rendition of *maccheroni*) when he was president.

What’s the enduring appeal? For one thing, pasta is economical, comprising, in its most basic form, nothing more than flour and eggs, or even just flour and water. It’s versatile—you can form it into countless shapes, and, depending on how you sauce it, it will easily accommodate everyone’s tastes, from the most adherent vegetarian to the most unapologetic carnivore—and, especially, picky children.

Beyond all of those practical reasons, making homemade pasta is simply a rewarding experience. I get a ridiculous sense of accomplishment when I look at a batch of gorgeous noodles, coiled into nests, that I have just finished cutting. My pasta is never perfect; my half-moon ravioli are always a little off-kilter, my noodles not all the same length. But that is the beauty of making your own pasta. It looks, feels and tastes homemade.

If there is a secret to making good pasta at home, it’s this: Just relax. The more you touch and handle the dough, the more familiar you will become with how it should feel—how firm and how smooth it should be.

Most Italian home cooks make basic egg pasta dough using soft wheat flour classified as “00” flour. It is finer than unbleached all-purpose flour and, in my opinion, turns out silkier dough that maintains an appealing chewiness when cooked. One flour can easily substitute for the other, however, and you can make perfectly good pasta using unbleached all-purpose flour, which is cheaper and easier to find. Semolina flour, made from coarsely ground high-protein durum wheat, is used to produce pasta that has a good “tooth,” but it can be expensive. Just a little added to a recipe will accomplish that toothiness.

Although I occasionally mix pasta dough the traditional way by mounding flour on the countertop and breaking eggs into a



Cut your homemade pasta into a variety of shapes, from *orecchiette* (little “ear-shaped” cups) to fettuccine to squares for soup.

Fresh Egg-Noodle Dough

This is a good all-purpose recipe for homemade pasta. The grains of the semolina flour act as tiny ball bearings on the kneading board, keeping the dough from sticking. *Yield: 1 pound pasta dough; serves 4.*

2¼ cups “00” flour or unbleached all-purpose flour	1/2 tsp fine sea salt
1 tbsp semolina flour, plus more for dusting your work surface	Pinch of freshly grated nutmeg
	3 extra-large eggs
	1 to 2 tbsp extra-virgin olive oil

Put 2 cups plus 2 tablespoons flour, 1 tablespoon semolina flour, the salt and nutmeg into a bowl or the work bowl of a food processor, and stir or pulse briefly to combine. Add the eggs and 1 tablespoon of the olive oil. Stir or process until the mixture forms small curds. Pinch together a bit of the mixture and roll it around in your hand. It should form a soft ball. If the mixture seems dry, drizzle in remaining 1 tablespoon of oil. If it seems too wet and sticky, add additional flour, 1 tablespoon at a time.

Turn the mixture out onto a work surface sprinkled with semolina flour. Press into a ball and knead until the dough is smooth and silky. Wrap and let rest at room temperature for 30 minutes, then shape as described in “Shaping and Cooking” on Page 42.



flour “well,” I usually take a shortcut and use my food processor. Remember that, when mixing dough for fresh pastas in a food processor, you should start with the smallest amount of flour listed in the recipe. If the dough is sticky, work in more flour as you knead.

Shaping and Cooking

For basic noodles, use a rolling pin to roll out the dough up to one-quarter-inch thick, then cut the dough into strips or squares with a sharp knife. View a helpful video on rolling dough and shaping noodles by hand at <http://goo.gl/tJ4euT>. Or, use a pasta machine to stretch and cut the dough. Read more about using pasta machines at www.MotherEarthNews.com/Homemade-Pasta.

To cook fresh pasta, bring a large pot of generously salted water to a rolling boil. Add your noodles, which cook quickly. Begin

checking for doneness by tasting a piece after just a couple of minutes. The pasta should be tender, but not soft or mushy. Drain the pasta in a colander set in the sink.

Toss cooked noodles with butter and freshly grated Parmigiano-Reggiano cheese, or with a hearty meat ragu—and don’t forget vegetables. One of my favorite ways to dress fresh noodles is with shredded zucchini sautéed briefly with garlic in olive oil, all topped with a shower of chopped fresh basil and Parmigiano cheese.

Here are instructions and three recipes—one for basic egg pasta dough, one for whole-wheat dough, and one for gluten-free dough—to get you started in turning out personalized pasta. 🌱

Domenica Marchetti cranks out pasta and other Italian recipes for her family in Alexandria, Va. She is the author of *The Glorious Vegetables of Italy* and *The Glorious Pasta of Italy*. Both are available on Page 97.

Whole-Wheat Noodle Dough

This eggless fresh pasta dough yields appealingly chewy results. I use it to make fettuccine and also homemade *orecchiette* (bite-sized, “ear-shaped” pasta). The noodle dough can also be stretched and cut into short strips, perfect for adding to hearty vegetable and bean soups. *Yield: 1 pound pasta dough; serves 4.*

1½ cups whole-wheat flour	1/2 tsp fine sea salt
3/4 cup “00” flour or unbleached all-purpose flour, plus more for dust- ing your work surface	1 tbsp extra-virgin olive oil, plus more if needed 2/3 cup tepid water

Put the flours and salt in a bowl or the work bowl of a food processor, and stir or pulse to combine. Drizzle in 1 tablespoon olive oil and continue to stir or turn on the machine. Slowly add the water, adding only as much as you need for the dough to form. Pinch together a bit of the mixture and roll it around. It should form a ball. If the mixture seems dry, add a few more drops of olive oil and stir or pulse briefly. If it seems too wet or sticky, add 1 tablespoon of flour at a time, and stir or pulse briefly.

Turn the mixture out onto a work surface sprinkled lightly with flour. Press it together to form a rough ball, and knead for several minutes until the dough is smooth and silky. Wrap tightly and let rest at room temperature for 30 minutes before shaping as described in “Shaping and Cooking” above.



Gluten-Free Noodle Dough

In this recipe, from *Gluten-Free Pasta* by Roben Asbell, powdered whey gives the dough strength and structure. Find the guar gum and xanthan gum at health food stores or online. *Yield: 1 pound pasta dough; serves 4.*

3/4 cup arrowroot starch, plus more for dusting your work surface	3 tbsp whey protein powder or 3/4 cup nonfat dry milk
1/2 cup tapioca flour	1 tbsp guar gum
1/4 cup sweet rice flour	1 tsp xanthan gum
1/3 cup millet flour	1/2 tsp fine salt
	3 large eggs
	3 to 4 tbsp water

Measure the arrowroot starch, tapioca flour, sweet rice flour, millet flour, whey protein, guar gum, xanthan gum and salt into a bowl or the work bowl of a food processor and stir or pulse to combine. Add the eggs and 3 tablespoons water, and stir or process until the dough gets stiff. Transfer dough to an arrowroot starch-dusted countertop and knead for 3 minutes, until smooth and flexible. Wrap and let rest at room temperature for 30 minutes, then shape as described in “Shaping and Cooking” above.



STOCKFOODWEAVER, STEPHANIE; LEFT: FOTOLIA/TOMO JESENICNIK

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Find our recipe for Orange Cake with Chocolate Glaze at floridacrystals.com.



DO-IT-YOURSELF DRYING RACK

Use your noodle: Build this folding rack to dry fresh pasta, herbs and more.

By Spike Carlsen

You've just read "Make Your Own Pastas" (Page 40), and now you're itching to get flour under your fingernails. If you want to save some pasta for later, you'll need a way to dry those noodles. These plans show you how to build a rack for drying your fresh pasta. The rack is collapsible, so it needn't clutter up your countertop when not in use. You'll find lots of other uses for this rack besides drying fresh pasta—see "10 Things You Can Do with a Folding Rack" (opposite).

When opened, the legs of this DIY drying rack will span a standard 32-inch kitchen sink. When closed, the rack can be stowed out of the way next to your cutting boards and cookie sheets.

Although these plans direct you to build a pasta drying rack from pine, you can also use oak, maple, or any other hardwood for strength and ap-

pearance. Get started by referring to the materials and cutting lists on the next page, and then follow these step-by-step instructions to build a rack that will dry yards of pasta over years of use.

1 Cut the rack sides (A) to the length indicated in the cutting list. Mark the positions of the 3/8-inch-diameter holes for the dowels, as shown in the top illustration on Page 45. Bore the holes using a drill press or a drill with a stop collar. Use a brad-point bit (with a center spur to keep the bit in line), and make the holes 7/16-inch deep. **Note:** The position of the leg pivot holes is critical because it determines how far the legs will splay out when the collapsible drying rack is opened and in use.

2 Use a compass to draw the 1¼-inch-radius semicircles for rounding the ends of the rack sides. Use a jigsaw to cut the ends to shape, and sand the edges smooth.

3 Cut the rack ends (B) and dowels (C) to length and round the ends slightly with sandpaper. Tap the dowels into the holes on one of the rack sides (A), and then lay the assembly on a flat surface. Position the other side across from it and then, starting at one end, fit the dowels into the holes of the second side. Don't use glue. **Note:** You can simplify this task by using bar clamps to gently squeeze the sides toward each other as you fit in the dowel ends.

4 Drill pilot holes for the rack ends (B), and then secure the ends between the sides (A) using two 2-inch trim head screws for each joint. Drive the screw heads slightly below the surface and fill the depressions with wood putty.

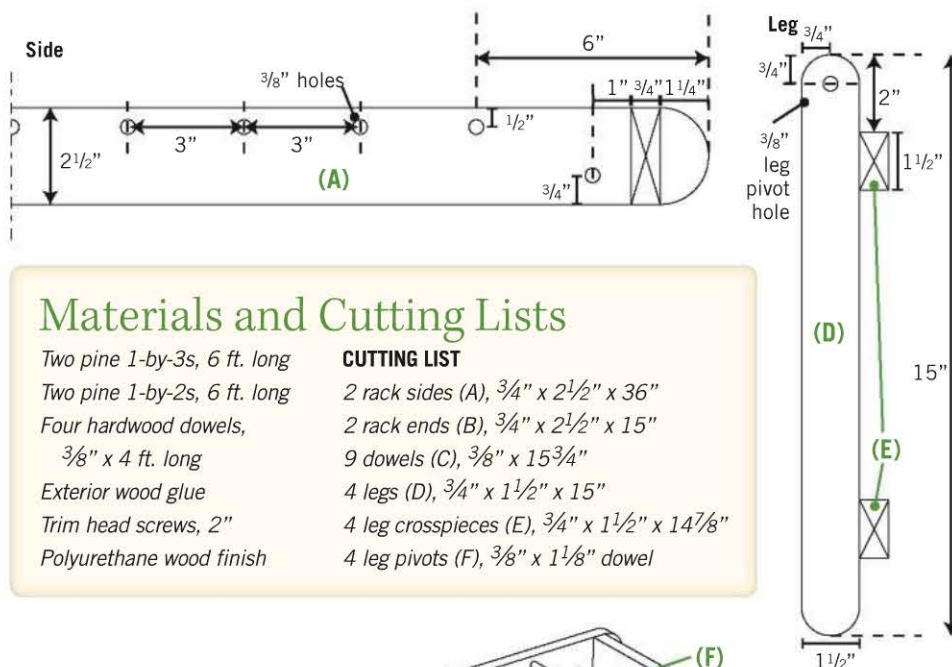
5 Cut the legs (D) to length, and then mark and drill the pivot holes all the way through the legs as shown. Mark a 3/4-inch radius on the leg ends, and shape them with a jigsaw and sandpaper as you did with the rack sides in Step 2.

Cut the leg crosspieces (E) to length, and slightly bevel the ends. Pre-drill the holes to prevent splitting, and then secure the crosspieces to the legs using glue and 2-inch trim head screws. Use a carpenter's square to make sure the leg assemblies are square as you fasten the parts.

6 Create the four small leg pivots (F) by cutting dowels to length and then using sandpaper to slightly taper one end as shown in the leg pivot detail at right. (The tapered ends will allow the folding rack's legs to swing easily.) To install each leg assembly, apply a dab of wood glue to the pivot holes in the legs (D), line up the leg pivot holes with the rack side pivot holes (A), and then tap the leg pivots (F) through the legs and into the sides, with the tapered ends facing the rack sides (A). **Note:** If you've measured, cut, drilled and assembled the collapsible drying rack correctly, the distance between the bottoms of the legs when swung out should be between 33 and 35 inches, and the legs should fold neatly into the rack for storage.

7 Sand your collapsible drying rack and finish it with two coats of paint or polyurethane to protect the wood from moisture during use. 🌳

Spike Carlsen is an author and woodworker whose first article for MOTHER was "Arch House: A Different Way to Build" (<http://goo.gl/Gjf924>) in 1989. This piece is an excerpt from his terrific new book, *The Backyard Homestead Book of Building Projects* (see Page 97 to order).



Materials and Cutting Lists

Two pine 1-by-3s, 6 ft. long

Two pine 1-by-2s, 6 ft. long

Four hardwood dowels,

3/8" x 4 ft. long

Exterior wood glue

Trim head screws, 2"

Polyurethane wood finish

CUTTING LIST

2 rack sides (A), 3/4" x 2 1/2" x 36"

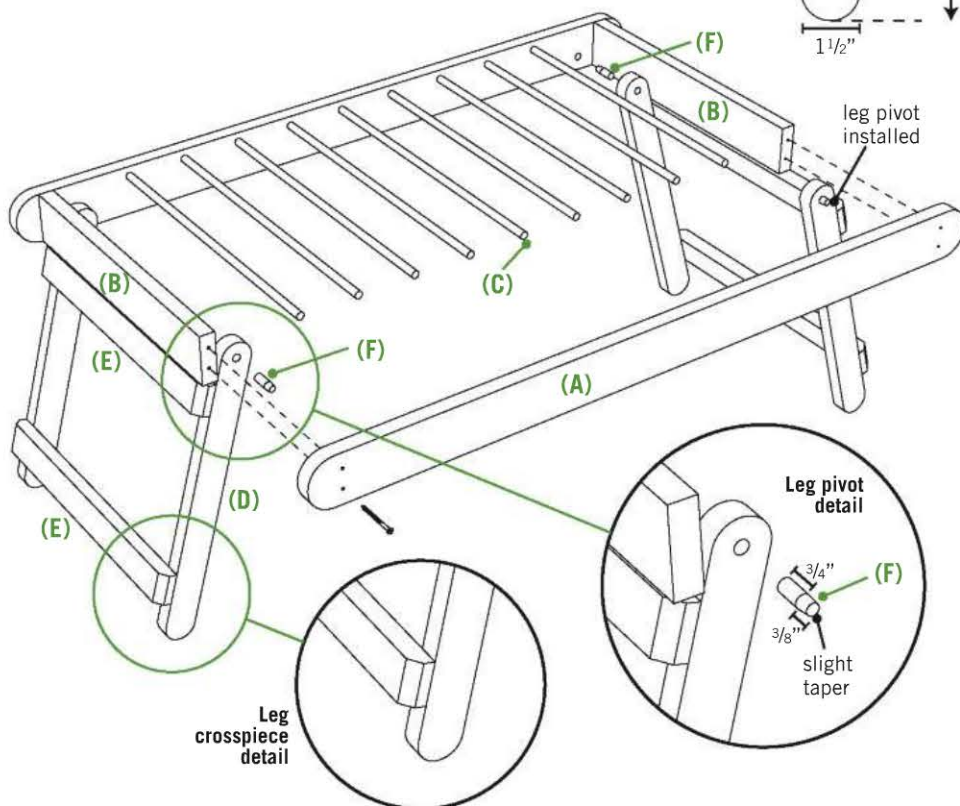
2 rack ends (B), 3/4" x 2 1/2" x 15"

9 dowels (C), 3/8" x 15 3/4"

4 legs (D), 3/4" x 1 1/2" x 15"

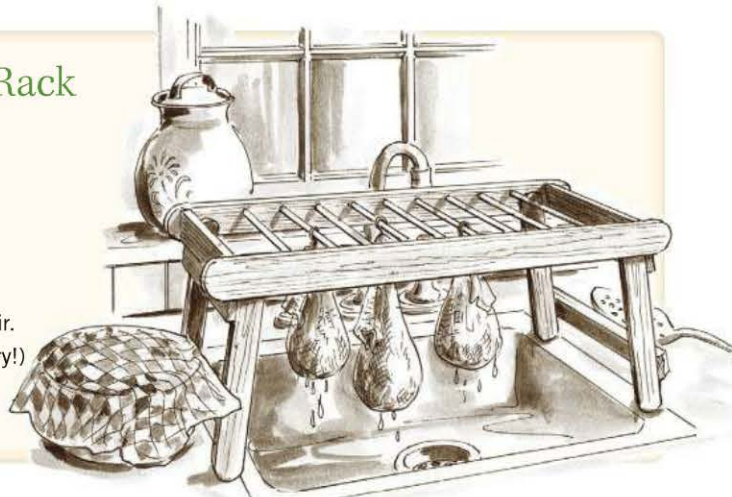
4 leg crosspieces (E), 3/4" x 1 1/2" x 14 7/8"

4 leg pivots (F), 3/8" x 1 1/8" dowel

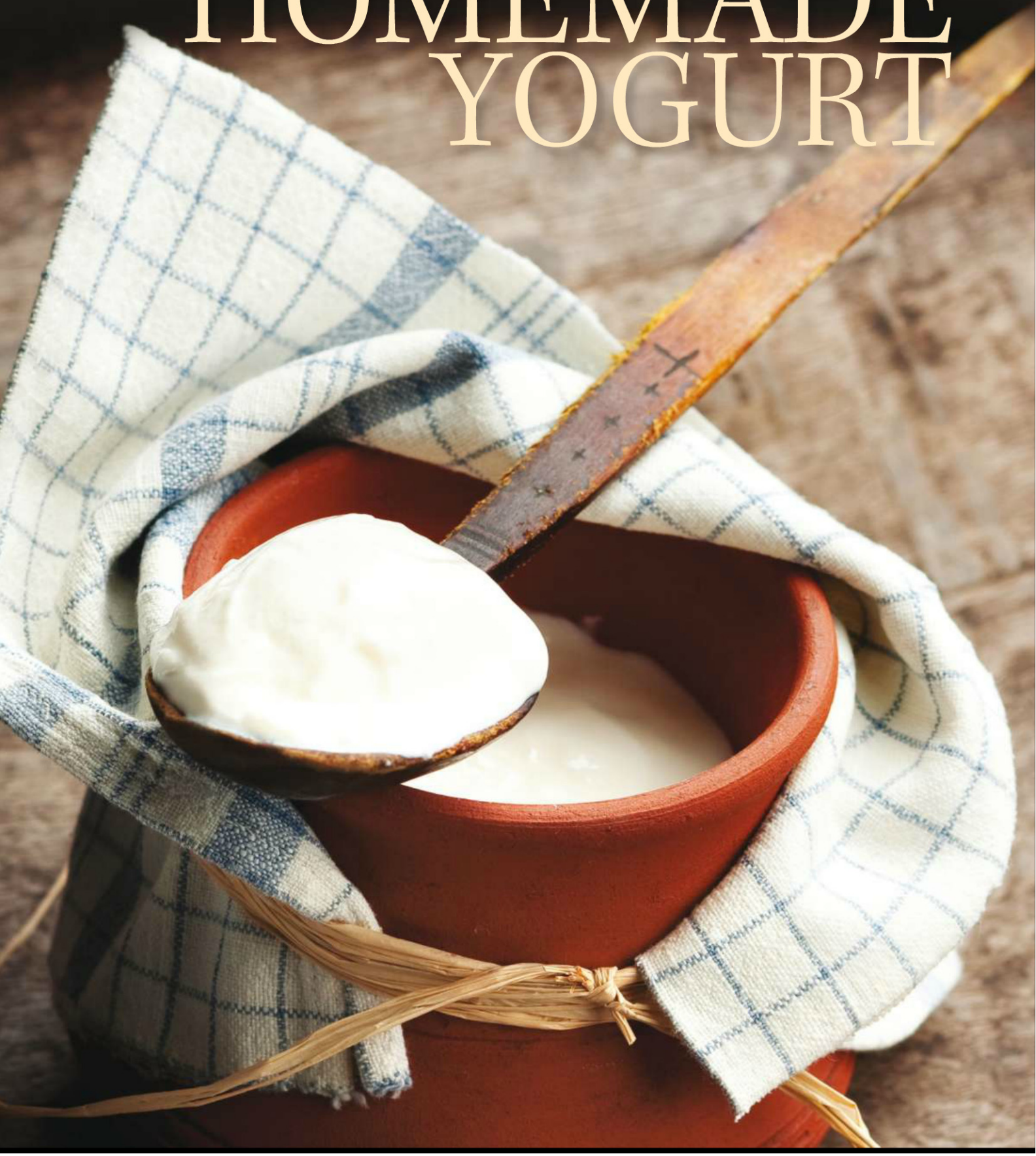


10 Things You Can Do with a Folding Rack

- 1 Hang your cheese-straining bag over a bowl or sink.
- 2 Dry homemade pasta.
- 3 Place the rack over a heating vent to dry damp mittens and hats.
- 4 Air-dry laundry, dish towels and washrags.
- 5 Serve breakfast in bed with a tray on top of the rack.
- 6 Hang freshly cut herbs and spices for drying.
- 7 Use the rack as a laptop desk when you're working in an easy chair.
- 8 Air-dry dishes on a crowded counter. (Use it to build a second story!)
- 9 Keep bugs off your picnic food by draping netting over the rack.
- 10 Cool pies and cakes.



Easy, High-Quality, Low-Cost
**HOMEMADE
YOGURT**



Try making your own yogurt, and we're betting you'll agree it tastes better than store-bought.

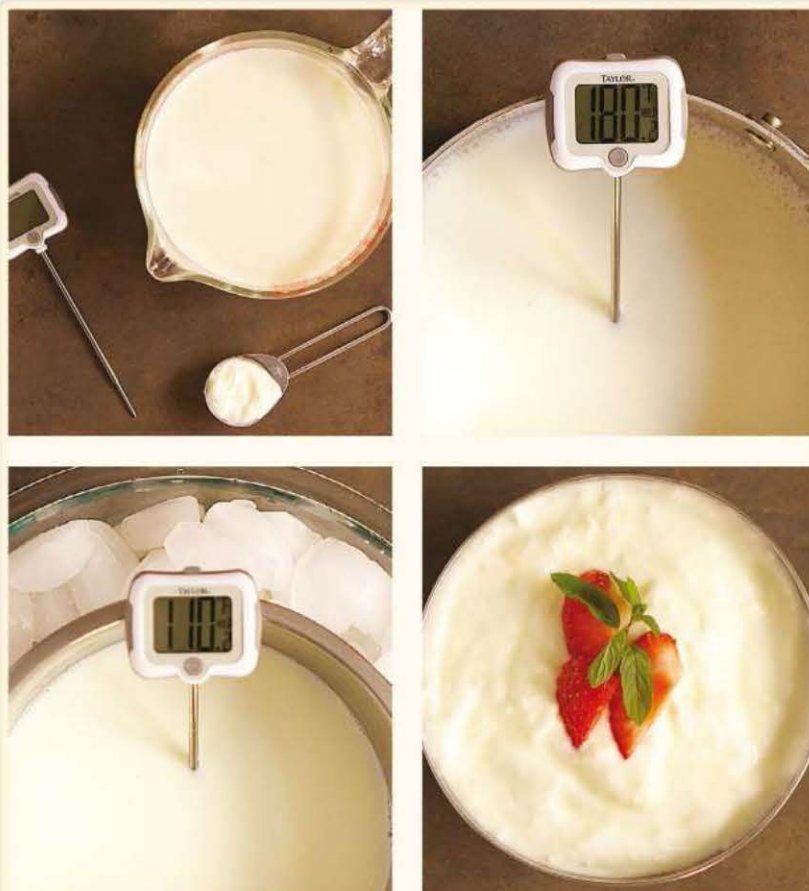
By Tabitha Alterman

No doubt you've heard about the health benefits of yogurt, the most widely consumed fermented milk product in the world. Delicious yogurt is nutrient-dense, packing a one-two punch of protein and calcium, among other valuable nutrients. People with moderate lactose intolerance may find yogurt easier to digest than milk. Most famously, yogurt's live bacteria (usually a combo of *Lactobacillus bulgaricus* and *Streptococcus thermophilus*) may keep undesirable bacteria in our digestive systems at bay.

In fact, some have speculated that the prominence of yogurt in the diet of rural Bulgarians is responsible for their unusually long life spans. In many parts of the world, yogurt is a staple as important as bread or water, and it comes in many incarnations, from carbonated yogurt "sodas" to tangy cheeses to delectable sauces (find a recipe for a version of the classic Greek sauce *tzatziki* on Page 48). The culinary traditions surrounding this fermented milk product run so deep that writer Anne Mendelson, author of the book *Milk: The Surprising Story of Milk Through the Ages*, has dubbed the yogurt-loving part of the globe from eastern Hungary to western China "Yogurtistan."

Homemade yogurt is usually less expensive than store-bought, and it will also be devoid of the preservatives, stabilizers, fillers and sweeteners found in most grocery store yogurts. You can make your yogurt with the highest-quality milk (cow, goat, sheep or even buffalo), preferably locally produced, and free of added hormones. Ideally, milk for yogurt-making comes from healthy, grass-fed animals—they make the most nutritious milk you can get—and hasn't been ultra-pasteurized, which denatures some of the milk proteins. Homemade yogurt outshines commercial yogurt in flavor and texture, plus it's pretty easy to concoct in your kitchen.

Any milk can be used to make yogurt, and density can range from skim to low-fat or



Top, left to right: Gather milk and starter; heat milk to 180 degrees Fahrenheit. Bottom, left to right: Cool milk to 110 degrees and add starter; let yogurt incubate, then enjoy!

How to Make Yogurt

1 quart milk, preferably non-homogenized, not ultra-pasteurized
1 tbsp yogurt starter or store-bought yogurt with live cultures

Heat the milk. In a heavy-bottom saucepan, slowly bring the milk to 180 degrees Fahrenheit over low heat (use a thermometer). Stir frequently to avoid sticking caused by the milk sugars scorching.

Remove from heat. Take pan off burner to cool milk to 110 to 115 degrees. To speed cooling, pour heated milk into a separate bowl that's been set into a larger bowl filled with ice, and stir the milk. Monitor the temperature carefully.

Mix in the starter. In a separate small bowl, mix about half a cup of the milk with your starter, then pour the mixture into the rest of the milk. Stir to combine.

Incubate. Pour the inoculated milk into your incubator (see Page 48 for options), and keep the container at approximately 110 degrees for at least several hours. Avoid jostling the container while the yogurt sets.

Check consistency. Most yogurt will set to a custard-like texture in 3 to 4 hours, but you might like the results better after 6 to 8 hours. The longer yogurt incubates, the tangier and grainier it will get. At the same time, the longer it ferments, the more the bacillus (the bacteria in the starter culture) will consume the lactose. After a few hours, check the yogurt by gently removing a small spoonful without disturbing the rest of the batch. Check every half-hour or so. Refrigerate the yogurt when it has reached your desired consistency and taste.

Think about shelf life. Your homemade yogurt will probably never taste better than at the moment you've decided it's done, but some people enjoy the changing flavor as the yogurt sours over time. It will keep well for a week or two, but it may decline in effectiveness as a starter for the next batch after 5 to 7 days.

whole. If you want a thick, creamy yogurt for broad culinary use, you'll be most pleased with the results from whole cow's milk. Yogurt made with goat's milk, which has a different composition from that of cow's or sheep's milk, is good, but you probably won't be able to stand a spoon up in it unless you strain it or add powdered milk.

The Best Homemade Yogurt

Heating the milk slowly is important to achieving the thick texture many yogurt lovers seek. The faster you heat the milk, the grainier the yogurt will be. Heating kills any bacteria that could compete with starter bacteria, and slow heating allows the proteins in milk to link into a "fine matrix of chains that is much better at retaining liquid in its small interstices," says Harold McGee in *On Food and Cooking: The Science and Lore of the Kitchen*.

Yogurt starters. Good yogurt starts with a good culture. You can inoculate your milk with store-bought plain yogurt that contains live cultures. Find a plain version with flavor you enjoy, and use it to make your first batch. Then save a portion of each batch to inoculate the next one.

You can also find yogurt starters through cheesemaking suppliers and in well-stocked grocery stores. Some heirloom cultures have been kept for many years. (Browse the options at www.CulturesForHealth.com or www.Cheesemaking.com.) Our recipe on Page 47 calls for less starter yogurt than you may see in many other recipes. This is a tip gleaned from *The Joy of Cooking* by Irma S. Rombauer. "You may wonder why so little starter is used and think that a little more will produce a better result," says the 75th-anniversary edition of the book. "It won't. The bacillus, if crowded, gives a sour, watery product."

Incubators. Deciding how to incubate the yogurt is the next important decision you'll make in this simple process. Any contraption that maintains a set temperature of 110 to 115 degrees Fahrenheit will do

just fine. A small cooler or thermos will usually work well. If the cooler won't be full, fill it with towels or jars of heated water to maintain the ideal temperature. You may also be able to fit your yogurt container into a food dehydrator set to the correct temperature. Another option is your oven, turned off but heated with the pilot light, light bulb or a large container of hot water

(this method may require some experimentation). Many inexpensive, easy-to-use electric yogurt-makers also accomplish this task.

If a batch of yogurt did not set up properly, all is not lost. Reheat it to 110 degrees, mix in another tablespoon of starter, and try again.

Some people put fruit or sweeteners in the container during fermentation, but adding them right before you eat the yogurt is easy and will give the yogurt the same flavor.

How to Make Greek Yogurt

Greek yogurt was traditionally made by straining yogurt that had been prepared with the same cultures as regular yogurt. (Today, many commercial producers thicken yogurt with gelatin or carrageenan, which comes from seaweed.)

Some people add powdered milk to thicken their homemade yogurt and boost its calcium content. You can also thicken your yogurt simply by straining out some of the whey, which will concentrate the flavor and make the yogurt suitable for use in sauces and other dishes.

To create this thicker homemade yogurt, pour the final product into a cheesecloth bag or a colander lined with cheesecloth or a clean kitchen towel to strain for a few hours. If you let the yogurt drain for up to a day, you'll end up with yogurt cheese, or *labneh*. Either way, keep the yogurt refrigerated over a larger pan or bowl while it drains.

For fresh ideas on using your homemade yogurt in new and interesting ways, we highly recommend the books *The Art of Fermentation* by Sandor Ellix Katz (available on Page 97) and *Milk: The Surprising Story of Milk Through the Ages* by Anne Mendelson. 🌱



Tantalizing Tzatziki Sauce Recipe

This simple sauce is traditionally paired with Mediterranean pita sandwiches filled with gyro meat or falafel. It's also delicious as a dip for toasted bread or raw vegetables. Try it on grilled lamb burgers, too. *Yield: 2½ cups.*

1 medium cucumber, seeded and diced or grated
1 tsp kosher salt
4 garlic cloves
2 tsp fresh dill
2 tsp fresh mint
Juice of half a lemon
2 cups strained yogurt (see "How to Make Greek Yogurt" at right)
Kosher salt and freshly ground pepper, to taste

Place the cucumber in a strainer set over the sink to catch dripping water. Sprinkle salt over the cucumber and let drain for half an hour. Chop the garlic and herbs or crush them with a mortar and pestle. Stir the herb mixture, cucumbers and lemon juice into the yogurt. Season with more salt and pepper, to taste. Serve chilled.

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How to Maximize MPG

You don't need a brand new ride to save money on gas. Learn how to get better gas mileage from your current car with these 12 driving techniques.

By Todd Kaho

If you want to save big bucks at the pump, simply changing your driving habits can improve your gas mileage by 30 percent or more. To illustrate this point, two General Motors engineers drove identical 2011 Chevy Cruze sedans on a combined city/highway route, each using a different driving style. The 2011 Cruze has an Environmental Protection Agency (EPA) fuel-economy rating of 26 miles per gallon in the city and 36 mpg on the highway. The engineer who drove aggressively averaged 20.5 mpg, while the engineer who applied techniques used to boost fuel economy achieved an average of 37.4 mpg on the same course. *That's a difference of 16.9 mpg due solely to driving style!*

Many people falsely assume that the vehicle they drive should consistently deliver its official estimated fuel-economy rating in real-world driving. The pivotal word here is "estimated." The EPA calculates the city, highway and combined mileage numbers by running the vehicle through preprogrammed driving-simulation cycles on a stationary chassis dynamometer. These tests do not completely allow for human factors, including driving style, as is shown by the Cruze example.

This is actually good news: A little bit of human control can go a long way toward meeting or even exceeding a car's mpg rating. The following 12 driving techniques are easy to learn and apply in any vehicle. Try these out and invoke your competitive spirit to see how much you can improve your vehicle's gas mileage with each tank.



Rolling toward red? Let off the gas and coast to a stop.

1. Be sensitive. The trick when accelerating is to find your car's "sweet spot." Give it too much gas, and you expend energy on unnecessary acceleration and heat. If you're too timid with the throttle, however, you waste energy by underutilizing your motor's capacity for work. Motor designs can be radically diverse, so every model has a different sweet spot. This technique is all about being sensitive to your vehicle's fuel-consumption behaviors.

2. Don't be a speed racer. Wind resistance increases with speed, meaning high-speed driving greatly diminishes fuel economy. The threshold at which highway gas mileage begins to degrade is at about 50 miles per hour. Above that, fuel economy drops off at a rapid rate. You can increase efficiency by traveling below the speed limit, but only when it's feasible and doing so won't impede traffic or cause other safety issues. Electric cars will see their range drop significantly at higher speeds, so if you feel "range anxiety," slowing down is a good idea.

3. Use A/C strategically. An air conditioning compressor draws power from the engine, making it work harder and hurting fuel economy. At slower speeds, roll down your windows to cool off. At highway speeds, however, having the windows down will create aerodynamic inefficiencies that sap momentum, so in such cases, it's actually better to use air conditioning.

4. Drive steadily and smoothly. After you get up to cruising speed, avoid aggressive use of the accelerator and brakes unless needed for merging or emergency stops. Use just enough pressure on the pedal to maintain speed. On short hills, avoid acceleration up the hill to maintain speed unless you're in heavy traffic.

You can pick the speed back up on the downside of the grade. For highway driving, cruise control, which maintains a set speed with minimal throttle input, can help significantly improve gas mileage.

5. Read the road ahead. Increasing your efficiency behind the wheel can also make you a safer driver, because it requires careful attention to the conditions ahead of and around your car. Increasing your following distance and

shifting your focus to farther down the road will allow you to anticipate traffic lights, stops and other potential conditions that could hinder progress. The idea here is to conserve momentum so you don't need to accelerate back up to speed. If you see a red light ahead, let off the gas and allow the vehicle to coast. If you see a green light about to turn yellow and traffic isn't heavy, ease off the accelerator so you can avoid hard braking or even avoid braking altogether. These techniques will also significantly reduce brake wear and maintenance costs.

6. Coast in gear. When you do need to slow down, leave the vehicle in gear. It seems logical that a car idling in neutral would use less gas when coasting, but that's not true with modern fuel-injection engines. Most have a computer-controlled fuel cutoff that stops the flow of fuel through the injection system so the vehicle uses no gas at all. In hybrids and electric cars, coasting in neutral limits regenerative braking, whereas a good level of electric regeneration is provided when coasting in gear.

7. Use higher gears. Modern automatic transmissions save gas via over-drive ratios that require fewer engine revolutions per minute (rpm) at cruising speed. With a manual transmission, you can save gas by shifting to each higher gear a little earlier than normal—called “short shifting”—or by skipping gears (from third to fifth, for example). Diesels are particularly compatible with short shifting because



Gas-saving gadgets: a digital tire pressure gauge and a map or GPS to plan your route.

they offer a lot of torque at low rpm. Continuously variable transmissions don't use gears, but they have been designed to automatically select the most appropriate drive ratio.

8. Plan your route. It's amazing how much gas you can save by combining trips and planning the most time-efficient driving route before you go. Also, prudent planning will ensure there is sufficient range when driving an electric car. Taking a route with mostly right turns is generally more economical than a route with a lot of left turns, because you won't spend time waiting to turn across oncoming traffic.

9. Limit idling. When a car is motionless and idling, it's getting zero mpg. If you have a real-time mpg display in your car, you can watch the average fuel economy go down when you're idling. For this reason, a gasoline-electric hybrid vehicle shuts off its gas engine when stopped; it seamlessly restarts when the driver takes his or her foot off the brake

pedal. Of course, don't shut your engine off at a traffic light or in other potentially unsafe situations, but if you'll be idling for more than a minute, go ahead and turn off the engine. Unlike older, carbureted cars, today's fuel-injection engines don't require a long warm-up time or use much gas to restart. Unless you need the heater on to keep the windows clear, use a quick start-and-go to save gas.


10. Check tire pressure. According to the EPA, letting all four tires deflate by just 1 pound per square inch (psi) will reduce gas mileage by 0.3 percent. Tires lose pressure over time—especially in cold weather—and need to be topped off regularly. Check your tires at least once a month using a digital tire pressure gauge (like the one shown above) for accuracy.

11. Jettison the junk. Clear the clutter out of your cabin and trunk on a regular basis. Emergency supplies should be carried, but other extra weight will drag down fuel economy.

12. Track your success. Keeping track of your gas mileage will ultimately help you improve your frugal-driving skills. Newer cars make this task easy thanks to a fuel-economy function built into the trip computer, and most provide an average-mpg display. The most useful tool is an instant mpg readout that gives real-time feedback to help you pinpoint what hurts efficiency. If your car doesn't have one, you can buy an aftermarket add-on, or learn how to manually calculate your gas mileage at <http://goo.gl/P6wis9>. By keeping records, each time you head out on the road can be an opportunity to discover how to achieve better gas mileage. 🌱



Stopped for a while? Turn off the engine to save gas when you'll have to idle for a minute or more.



Cub Cadet's RZT-S ZERO electric zero-turn riding mower gets the job done without gasoline or engine noise.

Take Charge of Your Yard

ELECTRIC POWER EQUIPMENT

Electric mowers, chainsaws and chippers are quieter, less expensive to run, and easier to maintain than their gas-powered counterparts.

By Ted Dillard

As anyone who has ever used gas-powered equipment knows, gas engines sometimes refuse to start just when you need them most. Maybe your mower needs a new spark plug or fuel filter. Or, maybe the carburetor needs

cleaning. Electric equipment promises easier maintenance—but that's not the only reason to choose electric models over gas-powered options.

With electric equipment, not only do you get reliable starting, avoid hauling gasoline and oil around, and skip breathing exhaust fumes, but you also consume

less energy and save money. Electric motors are more efficient than internal-combustion engines, in part because electric motors waste less energy in the form of heat than gas engines do.

All the battery-powered mowers listed here will cost you just a fraction of what gas-powered equivalents would cost to

operate. Stihl, a U.S. power-equipment manufacturer, estimates that the cost to operate its line of tools powered by lithium-ion batteries is only about 8 percent of the cost to run equivalent non-electric options.

If you're in the market for a new mower, chainsaw, snowblower, log splitter, chipper, or even a tractor, your greenest option is probably an electric machine. Recent improvements in battery life and weight are making electric power equipment even more appealing. Lighter lithium-ion batteries are now mainstream, and, with them, a new generation of far more powerful and practical cordless lawn and garden tools has emerged. Get your motor started with this roundup of features and options currently on the market.

Before You Buy

Noise. An electric tool is usually significantly quieter than its gasoline-engine counterpart. But don't expect tools that have high-speed spinning parts, such as blowers and mowers, to be whisper-quiet. A chainsaw, though, will be remarkably stealthy—what we like to call “Sunday-morning quiet” in our neighborhood. An electric snowblower or utility vehicle can be run at any hour without fear of disturbing your neighbors.

Power ratings. Manufacturers rate their electric products either by volts and amps or by watts. For example, most corded tools run on household voltage—120-volt alternating current (VAC)—and have a particular amp rating. When comparing similar products, remember that a higher amp rating indicates that more power can be delivered to the task. Also pay attention to the amount of pressure that products, such as log splitters, can deliver. For example, electric log splitters' force ratings, which range from 4 to 20 tons, indicate how effective the splitters are. These force ratings will help you compare electric and gas-powered options.

A motor rated in watts can be directly compared with one rated in amps simply by dividing the watts by the operating

voltage. For example, a 120-VAC, 4-ton log splitter rated at 1,500 watts will draw about 13 amps ($1,500 \div 120 = 12.5$). This formula works in reverse, too: A 120-volt motor that pulls 16 amps would be rated at 1,920 watts.

volts. For example, a 120-VAC, 4-ton log splitter rated at 1,500 watts will draw about 13 amps ($1,500 \div 120 = 12.5$). This formula works in reverse, too: A 120-volt motor that pulls 16 amps would be rated at 1,920 watts.



From top: A cordless Oregon chainsaw and a Ramsplitter log splitter can electrify your tasks while out in the woodlot.

Batteries. For cordless tools, battery technology has been revolutionized and improved in the past few years, especially for lithium-ion batteries. Lightweight and long-lasting, lithium-ion batteries are smaller and lighter than comparable lead-acid batteries with the same capacity—but more expensive.

Golf carts, fork lifts, snowblowers, and other tools used for applications where weight is an advantage will continue to use heavier lead-acid batteries, as will most lawn mowers and other large tools. They're inexpensive, last a long time, can be recycled, and are heavy—qualities that work well on a tractor, for example.

Current Models, No Gas Required

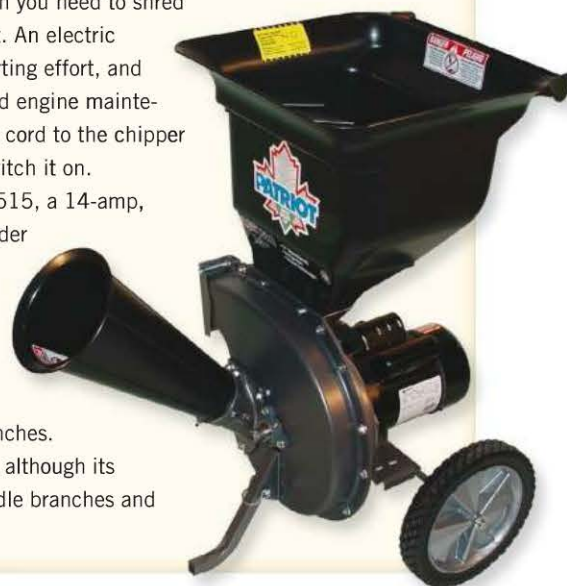
Log splitters are tools for which more power is better. They also represent an electric tool breaking into a true professional-grade performance bracket. Small splitters

Electric Chippers

Electric chippers are just the ticket when you need to shred twigs and leaves for mulch and compost. An electric model requires less preparation and starting effort, and you won't have to deal with refueling and engine maintenance. Instead, simply run a heavy-duty cord to the chipper (long lengths require larger wire) and switch it on.

One option is Patriot Products' CSV-2515, a 14-amp, 120-VAC electric chipper and leaf shredder (pictured at right). The company says it can handle branches of up to 2½ inches in diameter. Though you won't have the engine roar, you're still going to get considerable noise from the spinning blades and their impact on the branches.

Sun Joe offers a 14-amp chipper, too, although its Chipper Joe is smaller and can only handle branches and twigs of up to 1½ inches in diameter.



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†Comparison based on average 4G speeds, comparison will vary based on actual speed.

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Circle #22; see card pg 113

This electric log splitter is nothing more than a standard 20-ton hydraulic splitter powered by electricity instead of gasoline. At 240 VAC, it's not something you can plug into a standard household outlet, but you could plug it into any 240-volt outlet.

Because they emit no exhaust, you can run electric splitters in a shed, barn or garage that's fully enclosed (and even heated). Another bonus: You won't need ear protection. Log Splitters Direct allows you to compare various manufacturers' models online at <http://goo.gl/3rq7wr>, including those from Ramsplitter, Boss Industrial, Oregon and Earthquake.

Chainsaws that are corded may not be convenient in a large woodlot. That's where lithium-ion batteries come in. I tested Oregon's 40-volt MAX cordless chainsaw, part of the company's line of PowerNow lithium-ion battery-powered tools. The saw runs a 14-inch bar and weighs 11 pounds. On a single charge, the company says the battery pack will last long enough to cut up to 250 branches measuring 2 to 3 inches in diameter.

I put the Oregon chainsaw to the test on a 3-foot-diameter oak tree. Cutting without the ear-splitting whine and stench of a gasoline-powered chainsaw was a joy. I

went through two battery packs and, as is typical with lithium-ion batteries, they barely slowed down until the charge was completely used up.

This Oregon saw is probably too heavy for rope or climbing work, and is not "professional" grade, but it's perfect for occasional homeowner tasks.

Other companies that offer electric chainsaws are Worx, Remington and Stihl. Are electric chainsaws going to replace cords of wood every year? No, but they're great tools for someone with a few acres to



The Snow Joe iON 40-volt snowblower lets you work without the hassle of a cord.

keep cleaned up, or a tree or two to buck up each season.

Snowblowers. A noisy engine can be especially annoying after a carpet of new snow has covered your neighborhood. Electric snowblowers offer a quieter option than gas-powered units, and a number of companies offer both corded and battery-powered models. These electric machines are lightweight, and available brands' models range in price from about \$200 (Mantis, GreenWorks, Toro and Worx) up to \$400 for the 32-pound Snow Joe iON 40-volt cordless model (pictured at left).

Mowers are enjoying a more prevalent presence in the electric world. Walk-behind choices include Black & Decker's self-propelled model (see photo, below right), the lightweight Neuton CE6 from DR Power Equipment, Stihl's RMA 370 with lithium-ion batteries, Toro's cordless e-Cycler (see photo, below left), and Worx's line of cordless options.

Rider options include the Mean Green CXR-52 and CXR-60, and Cub Cadet's innovative, super-quiet RZT-S ZERO (see photo, Page 52). The ZERO is the only



Ditch the earplugs! Electric mowers, such as Toro's e-Cycler (left) and Black & Decker's self-propelled model (right), are quieter than gas-powered mowers.



Convert a vintage Allis Chalmers G to electric power (left), or use the sun to power your tractor with Free Power Systems' Sun Horse 4812 (right).

electric zero-turn riding mower with steering wheel control and four-wheel steering.

Tractors comprise a field that is surprisingly vacant, but more and more DIYers are converting conventional lawn tractors to electric power, and some folks offer complete conversion kits. Rather than a standard power takeoff (PTO) to run accessories, converters usually use another motor to drive the mower deck, tiller or even a snowblower implement.

Roof-mounted solar panels power Free Power Systems' four-wheeled Sun Horse 4812, a compact tractor that can plow a field and fits in the back of a pickup truck (see videos of the Sun Horse in action at www.FreePowerSys.com/videos.html).

The Electric OX2 is a larger four-wheeled tractor built primarily for towing, but the multipurpose model (Electric OX2 MP) accommodates attachments,

such as a mower deck, rotary sweeper, snow thrower and dozer blade (learn more at www.ElectricTractor.com).

The Huguenot Street Farm in New York state completed an electric conversion of a vintage Allis Chalmers G tractor. With commercial batteries and a forklift motor, a golf cart controller system, and some fabricated mounts, you can take one of these classic beauties and give it a new, electric life. Learn how to do a conversion yourself at www.FlyingBeet.com/electricg.

Niekamp Tool Co. offers kits and tutorials for converting the Allis Chalmers G to electric power. You'll still need to source batteries and components, but the kit includes the bell-housing adapter plate, motor plate, stub shaft, pulleys with bearings, pilot bearing, screws and spacers, and motor cover for \$595. Find the kit online at www.NiekampToolCompany.com.

The Valley Oak Tool Co. offers electric conversions for Farmall Cub tractors. Find the currently available Electric Cubs, along with details about the conversion process, and watch a video online at www.ValleyOakTool.com/Electric-Tractor.

Even if you don't power your home with renewable energy, switching to electric power equipment will help reduce air and noise pollution. You'll spend pennies to operate electric tools, and you'll avoid engine tuneups and messy oil changes. Say goodbye to the tiresome task of yanking on a starter cord once and for all. 🌳

Ted Dillard writes about electric-power technology at www.ElectricChronicles.com. A version of this article was first published in *Home Power* magazine.

Solar Charging

Whether you live off-grid, want to avoid the oil and gas industries, or need to run electric tools in a remote corner of your property, a small solar photovoltaic (PV) charging system may be right for you.

For a modest investment of usually less than \$1,000, you can set up a small PV charging station. This is an especially good fit for the weekend-only tool user, so batteries can recharge over several days and be full for their next use. A small PV system on your garden shed can charge all of your tools, and after the system is paid for, there will be no further costs for "refueling." Learn how to build your own solar charging station at <http://goo.gl/Fpz4zk>.

Alternatively, if you have a household grid-tied PV system that offsets your utility usage, you can plug in your tools and charge from the sun without setting up a dedicated system or dealing with system batteries.



These PV panels, installed on a backyard shed by Nova Alternative Energy Systems, provide 2.3 kw of electricity.

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All performance testing was performed by independent agency ATS, Marietta Georgia in December 2013. The Carryall 500 (which uses same powertrain as XRT800 and XRT850) was tested against the Toro® MDX, Cushman® 1200, and Deere® TX commercial-grade vehicles. They were tested with driver plus cargo — 650 lb (294.8 kg) total weight — on rolling hills. For the hill climb, vehicles were tested with driver plus cargo 1200 lb (544.3 kg) on a 15-17% grade. Your results may vary.

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Circle #44; see card pg 113



An arrowhead-shaped solar array provides electricity to the Pyramid Lake Paiute Tribe Museum and Visitor Center in Nevada.

POWER FROM THE PEOPLE

These standout communities have made power plays to develop and control renewable energy sources in their own backyards.

By Greg Pahl

When you pay for the energy you use, where does your money go? Chances are it goes out of town, out of state, or even out of the country. Wouldn't it be great if you could keep your energy dollars close to home, help create new local jobs and business opportunities, and provide greater energy security and price stability? That's where community energy comes in. A growing number of people are discovering the many benefits of keeping their energy dollars circulating in their local economies.

Community energy reflects the idea that most of the power consumed in a locality should come from—and be owned and controlled by—the locality itself. Community energy initiatives based on local renewable resources are

now emerging across the country. While these projects take a variety of forms, one common element is local ownership. Community energy encourages new ways of imagining our relationship with resources: Think local *empowerment*.

This trend is especially apparent in the way the national electric grid is functioning as the balance of power shifts to communities. Today's grid is being transformed from a one-way flow of electricity out of large, centrally located generation plants to a two-way flow that includes many widely distributed renewable energy sources, such as wind, solar, hydropower and biogas. This transition to renewables is opening up new possibilities for community energy initiatives, such as the Harvard Solar Garden and the Piedmont Biofuels cooperative (keep reading for more information on these two case studies).

Power Up

So, how exactly do you set up a local community energy project? You can choose from many possible financial and ownership strategies, and selecting the right one will depend on a wide range of local issues. Some projects focus on a particular technology, such as solar hot water (as with the Plymouth Area Renewable Energy Initiative in New Hampshire) or biofuels. Others involve a larger enterprise, such as a wind farm or photovoltaic (PV) installation. There is no "right way," just the way that works best for your group.

While community energy projects can tap almost any local renewable power sources, solar electric is one of the fastest-growing sectors thanks to the dramatic decrease of the cost of PV panels in recent years. Another factor has been the enactment of "group net metering" laws in



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Circle #17; see card pg 113

some states, which allow customers served by the same utility to combine their meters as a single billing entity—thereby granting apartment dwellers the ability to participate in community energy projects. Another advantage of group net metering is that it offers a lot of flexibility for finding a good site to install, say, a large solar array. More and more co-ops, schools, municipalities and nonprofits are navigating their way through the financial, legal and technical aspects of a successful group net-metered solar project. A recent success story is that of Harvard, Mass.

The Harvard Solar Garden

Harvard, a town of 6,000 in central Massachusetts, participated in the Solarize Mass program in 2011, which resulted in the installation of 400 kilowatts (kw) of solar PV panels, serving 75 households in the community. Quite a few residents and businesses couldn't participate, however, because of site-specific limitations. This roadblock spawned the idea of a separate

shared-ownership energy-generation facility—the Harvard Solar Garden.

"We had 35 residents and three business owners who were ready to write checks if we could build a community solar installation," says Eric Broadbent, communications coordinator for the project. Broadbent and other residents took on the challenge of developing this member-owned community solar project—the first of its kind in the state. They applied for and received several state and federal grants, but had to overcome a number of obstacles—including laws and regulations concerning zoning and taxation—to move forward. Luckily, the project had strong grass-roots backing. "The local people wanted it, so every time we had to get past some hurdle, the community rallied in our support," Broadbent says.

The project, organized as a two-tiered LLC (limited liability companies offer legal protection to a project's owners/investors), made use of state tax credits,

Core Principles of Community Energy

Community ownership, community benefit. Precedence is given to the community's needs, including the health of the local economy and the environment.

Renewable, local and distributed. Renewable energy sources are ideal for building energy security because they won't run out, often are available across a wide geographic area, and pass on a cleaner corner of the world to future generations.

Adaptive resilience. Small, local projects are less vulnerable to external shocks, such as price spikes, and are better able to adapt to changing conditions.

Conservation first. With the impending demise of cheap and abundant fossil fuels, reducing the overall amount of energy we consume is paramount.



Residents, businesses and state agencies cooperated to build the Harvard Solar Garden.



Piedmont Biofuels supplies members with biodiesel made in North Carolina from waste oils and fats.

Commonwealth Solar II grants, Solar Renewable Energy Credits (SRECs), Section 1603 Program federal grants (no longer available), and federal investment tax credits. When the first phase went live in June 2014, the number of participants in the Harvard Solar Garden had grown to 47, and the energy generated by the array had reached 294 kw. A second phase is in its final stages.

Piedmont Biofuels

This Pittsboro-based cooperative has been leading the grass-roots sustainability movement in North Carolina by encouraging the use of locally produced biofuels made from waste fats and greases and used cooking oil. Piedmont Biofuels sells directly to its member-owners, who collectively own about 450 biodiesel-fueled vehicles. Members can buy biodiesel from the co-op or learn how to make

their own through an education program. The co-op has built dozens of small-scale fuel plants and runs a highly respected research facility. Piedmont Biofuels offers consultation services on everything it does.

Founded in 2003, the co-op made the transition from backyard biodiesel producer to small industrial producer (with a new, million-gallon-per-year facility) in 2006. Piedmont Biofuels' strengths are its diversification—selling biofuels, consulting, and designing and building small biodiesel reactors—and its local focus. “We’re not interested in being the next fuel monopoly,” says co-founder Lyle Estill. “We’re just trying to fuel our community.”

Keys to Staying Power

While every place and project will be different, one element is central to all successful community energy initiatives:



After a devastating tornado destroyed much of the town in 2007, Greensburg, Kan., rebuilt as a model sustainable community that incorporates many renewable energy technologies into its new buildings, including the Kiowa County Memorial Hospital pictured here.

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More than 400 people invested in WindShare, Canada's first community-owned wind power cooperative. The towering turbine in Toronto supplies electricity to about 250 homes.

a small group of dedicated, local citizens who are charged up by the project. This certainly was the case with the Harvard Solar Garden. "It was a combination of a few key individuals and broad local support from the community for renewable energy," Broadbent says. "Having businesses, residents and state agencies all working together on a project like this can produce amazing results."

The development of more community energy projects is often held up by the sheer cost and complexity of creating the financial and legal structures necessary for such ventures. One promising development is the creation of legal and financial models that are open-source—that is, available to anyone. Joy Hughes, founder of the Solar Gardens Institute, a Colorado-based organization that helps

communities pool their resources to build solar arrays, agrees. "Open-source information makes it possible for a non-profit, a small utility or a municipality to just go ahead and do a project for itself," Hughes says.

For advice on how to develop a localized energy endeavor, see "Community Energy Resources," below. I've tackled the intricacies at length in my book *Power from the People*. 🌱

Greg Pahl has written extensively on energy security in a post-carbon world. His environmental activism has included a founding membership in the Vermont Biofuels Association, and living off-grid with a wind turbine.

COMMUNITY ENERGY RESOURCES

BOOKS

To read more about renewable, community energy, turn to Page 97 to order either of these two books by this article's author, Greg Pahl:

Biodiesel: Growing a New Energy Economy:

Power from the People: How to Organize, Finance, and Launch Local Energy Projects

WEBSITES

"Community Wind," American Wind Energy Association: <http://goo.gl/w7dyKY>

A good introduction to the basics of community wind power that offers case studies from across the nation, presents project models, and reviews tax policies and incentives.

"A Guide to Community Solar," National Renewable Energy Lab: <http://goo.gl/z8rKDy>

A comprehensive guide to developing community solar projects that, although a bit dated (from 2010), offers a lot of useful information.

Northwest Community Energy: www.NWCommunityEnergy.org

This group works to establish a clean, diverse and affordable Northwest energy system based on efficient use of renewable resources with maximum local control.

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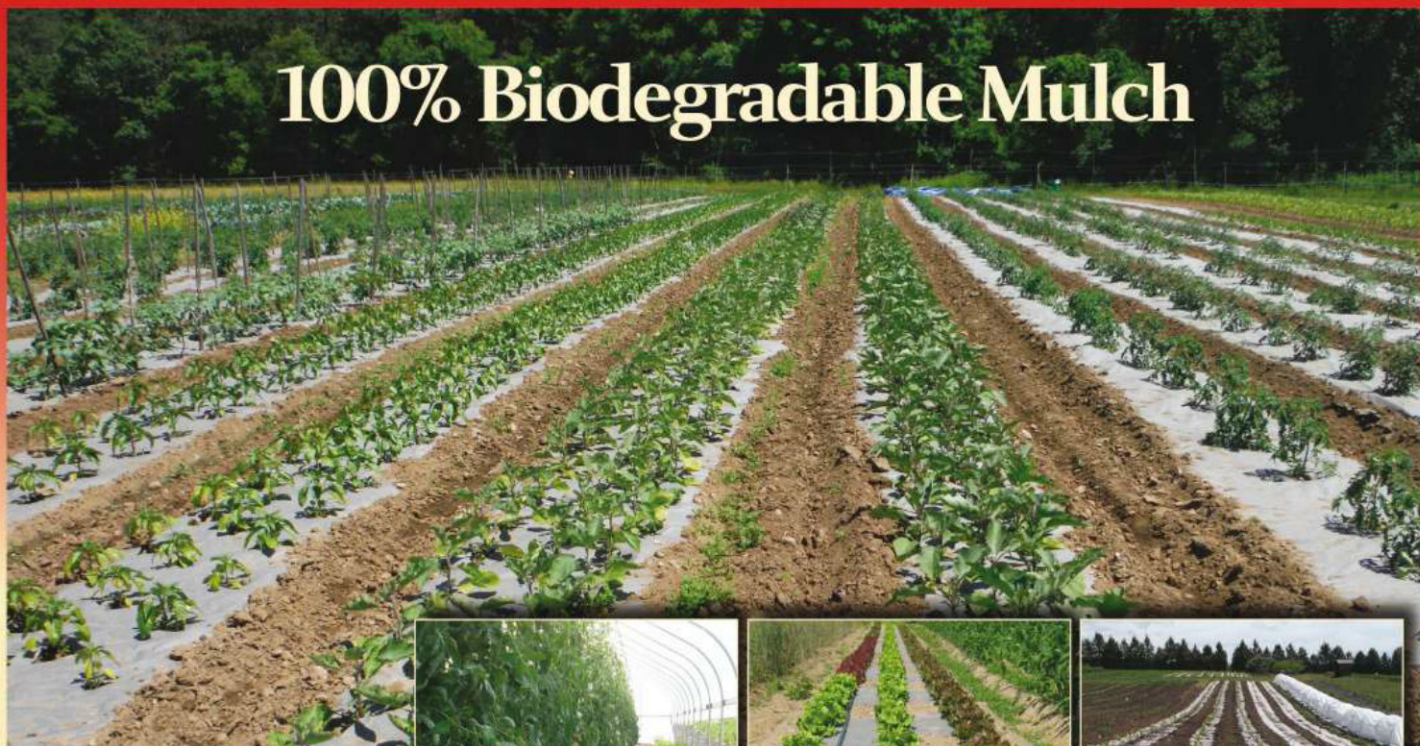
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IS RECYCLING WORTH IT?

You know to “Reduce, Reuse, Recycle” — but is the extra effort effective? Explore whether your recycling habits pay off for the environment.

By Joanna Poncavage

When Donald Sanderson, a former city councilman in Woodbury, N.J., led the effort to make recycling mandatory in the late 1970s, he was called names at city council meetings and criticized by the local press.irate citizens dumped trash on his lawn. He persisted, however, and the law helped Woodbury save thousands of dollars in landfill costs, preventing the city from having to raise taxes or cut services.

Since then, the public’s perception of the value of giving waste a second life has itself transformed, and recycling has diverted dramatic amounts of garbage from landfills. By 2012, we were recycling or composting almost 35 percent of the 251

million tons of trash generated annually in the United States. That’s 87 million tons of solid waste, or the equivalent savings of more than 1.1 quadrillion Btu of energy—the amount of energy consumed by about 10 million U.S. households in a year.

Dylan de Thomas, editorial director of *Resource Recycling*, says recycling is no longer just an end-of-the-pipe process to save space in landfills. “More and more, people are looking at a product’s entire life cycle,” says de Thomas, referring to a growing movement known as “sustainable materials management.” “This includes how long a product lasts, what greenhouse gassing occurs during its usage, and then, at the end of its useful life, how to manage the material so that it can

go to its highest and best use, such as a plastic bottle turned into another plastic bottle, as opposed to becoming a lower-quality item, such as strapping.”

So, is recycling really worth it? In short, yes. But, to keep it effective, the way we think about waste must shift away from mindless consumption. Even as we’re recycling more, we’re creating more garbage—4.38 pounds per person per day in 2012, up 63 percent from 2.68 pounds in 1960. According to the Environmental Protection Agency (EPA), the total amount of garbage for the same period increased by 183 percent, from 88.1 million tons in 1960 to 251 million tons in 2012.

To cut back on most materials, adopt a BYOC mentality: Bring Your Own Containers, such as cloth sacks or glass



Recycled goods are more valuable than trash, as the raw materials can be re-sold. Electronics are the fastest-growing part of waste streams worldwide.

jars, to grocery stores for transporting produce, bulk foods, and meats and cheeses from the deli counter. Take containers to restaurants for carting home leftovers. Purchase reusable drink canisters. Try your hand at making your own condiments, body care concoctions and cleaning products. Read on to find extra reduction tips for when you can't cut consumption.

When you do recycle, keep in mind that some substances are more worthwhile to recycle than others, depending on the energy required to extract the raw material, and the environmental footprint the substance leaves behind. Following is a list of materials, information about the worth of recycling each one, and tips for

how to follow the Three R's in the right order: reduce, reuse, and, finally, recycle.

Glass

Is it worth it? Absolutely. Glass is made from all-natural materials and can be recycled endlessly into new glass. Recycled glass can replace 95 percent of the raw materials needed to make new glass. Reusing 6 tons of recycled glass to form new glass reduces carbon dioxide emissions by 1 ton compared with using virgin materials. Recycling just 10 glass containers can save enough energy to operate a television for two hours and 13 minutes.

Reduce: Use bottle-deposit systems, such as those offered at some grocery stores

for milk. Also, many breweries and some wineries allow customers to refill beverage bottles, as opposed to buying new bottles when purchasing from a liquor store.

Reuse: Glass jars can become all manner of useful household items, such as vases or stackable storage containers. And, of course, glass jars are some of the best vessels for delivering drinks from spout to mouth, and for storing your leftovers.

Recycle: Don't toss non-container glass, such as light bulbs, window glass, ovenware or crystal, into the bin, as it can cause problems for processors of used glass containers. Instead, if it's still intact, seek out local recycling alternatives, use it in a DIY project, or donate it to a secondhand store.

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The pervasiveness of plastic is especially apparent in places where it tends to collect, such as along coasts and in the oceans.



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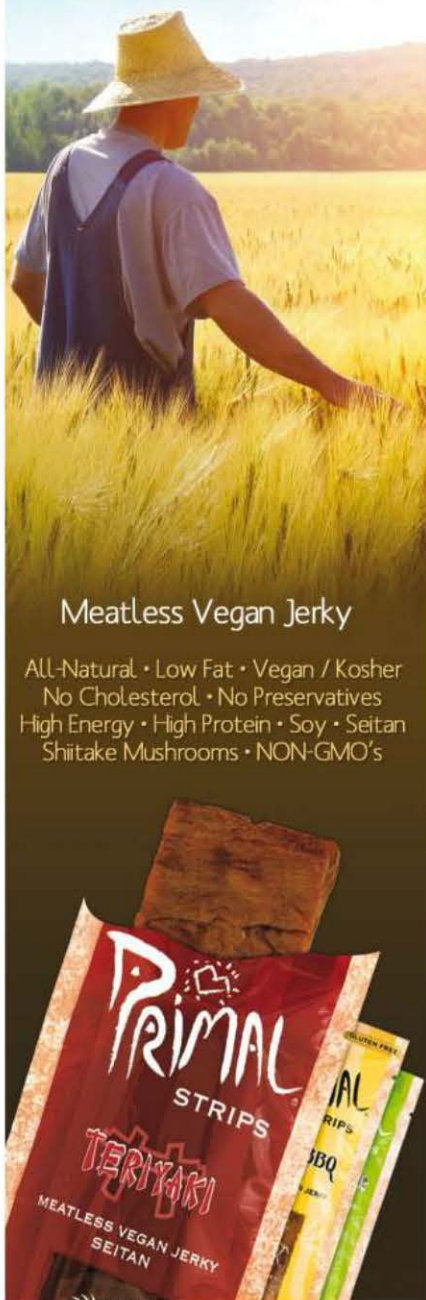
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Metals

Is it worth it? Definitely. Most scrap aluminum cans are used to make new cans. Producing aluminum from raw materials is energy-intensive, and making products from recycled aluminum uses a whopping 90 percent less energy. Recycling just six aluminum cans saves enough energy to power an air conditioner for one hour, or a laptop computer for 31 hours.

Steel can also be recycled infinitely without any loss of quality, and recycling 1 ton of steel conserves 2,500 pounds of iron ore, 1,400 pounds of coal, and 120 pounds of limestone.

Reduce: Can your own foods in reusable glass canning jars, and cook dry beans purchased in bulk instead of buying their canned counterparts. Replace canned carbonated beverages with a home soda-making machine, such as the Sodastream

(www.SodastreamUSA.com). You can also buy recycled aluminum foil.

Reuse: You can wash and reuse aluminum foil and aluminum dishes and trays.

Recycle: Recycling aluminum is efficient, so salvage as much as you can. In some states, you can redeem aluminum cans for money, usually 5 to 10 cents apiece. To find out whether your state participates, go to <http://goo.gl/khfpQ9>. For other metals, locate a local scrap yard that will take your scrap metal. You may receive cash for your efforts, and some metals, such as copper, are especially valuable.

Paper

Is it worth it? Yes. Every ton of recycled paper saves the energy equivalent of 165 gallons of gasoline, or enough energy to power the average U.S. home for six months. According to the EPA, recycling

Follow *Five R's*: *Refuse, Reduce, Reuse, Recycle, Rot*

The total annual household garbage for zero-waste zealot Bea Johnson fits into a quart jar, and she's reduced her family's recycling to a bare minimum, too. "We don't buy food in packaging, we don't use plastic, and we buy secondhand," she says. "We found ourselves to be healthier, with more time and money," living lives "based on experience rather than stuff." Johnson, author of *Zero Waste Home: The Ultimate Guide to Simplifying Your Life by Reducing Your Waste* (see Page 97 to order), also writes about her lifestyle on her blog, www.ZeroWasteHome.com.

The Johnsons follow the "Five R's" (instead of the usual three) in order: **Refuse** what they don't need, **reduce** what they do need, **reuse** by avoiding disposables and buying secondhand, **recycle** what they can't refuse, and **rot** (compost) what's left. While she hasn't totally achieved her goal of producing absolutely no waste, Johnson says she's elated by the power she has over her decisions. Her family lives in a 1,400-square-foot house in Marin County, across the Golden Gate Bridge from San Francisco, a city with a goal to go zero-waste by 2020.



The Johnsons fill jars with family favorites while avoiding wasteful packaging, which creates an appealing pantry.

paper causes 35 percent less water pollution and 74 percent less air pollution than making paper from raw materials. Recycled paper supplies about one-third of the materials used to make other U.S. paper products, and paper can be recycled five to seven times before its fibers become too short.

Reduce: In lieu of paper towels, use washable rags to clean surfaces. Rather than buying new books, borrow them from the library or peruse a used-book store. Purchase recycled paper for your home and office, and print on both sides of a page before recycling it.

Reuse: Projects for reclaimed paper range from practical to ornamental. Used paper can become a pot for seedlings, or packing to place around delicate items you ship. You can even turn it into brand new paper; learn how at <http://goo.gl/W9pn3E>.

Recycle: You don't need to remove staples. Keep paper with food residue out of your bin (compost it instead). Follow local guidelines, because you may need to sort different kinds of paper into different bins.



Recycling paper is a no-brainer: According to the EPA, 1 ton of recycled paper saves 17 trees, 7,000 gallons of water, and 463 gallons of oil, compared with using pristine pulp.

Plastics

Is it worth it? Barely. As pervasive as plastic is, the setup to recycle it is dismal, and plastic can only be recycled a finite number of times.

“At this point in time, plastics recycling is still a terribly inefficient and

incomplete operation with little to no opportunity for recycling certain types of plastic in many communities,” writes Michael SanClements, an ecologist at the University of Colorado, Boulder, and the author of *Plastic Purge* (available on Page 97).



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Plastics are made primarily from petroleum. In the United States, the average person disposes of almost 30 pounds of plastic bottles per year. By weight, plastics made up 13 percent of our total 251 million tons of trash in 2012, but only accounted for about 3 percent of what we recycled. We recycled only 9 percent of total plastic waste.

Because there are seven different types of plastic (indicated by the number, ranging from 1 to 7, stamped onto each product), sorting them properly is important. Mis-sorted plastics can contaminate the recycling stream and cause damage to recycling equipment.

Perhaps most dismaying of all, plastic never “goes away.” It breaks down into pieces too small to be seen by the naked eye. These particles find their way into our oceans, our food supply and our bodies. Even most so-called “biodegradable” plastics are environmentally harmful and only break down when subjected to heat in commercial facilities, where very few biodegradable plastics actually end up.

Reduce: Instead of bottled water, purchase a water filter and learn to love your tap water. Buy milk in returnable glass bottles. Replace plastic baggies with cloth alternatives. Bypass plastic shopping bags. Beth Terry, author of *Plastic-Free* (see Page 97 to order), has many more tips for getting plastic out of your life on her blog, which you can find at <http://goo.gl/Qhsv9n>.

Reuse: If you do use plastic baggies, wash and reuse them.

Recycle: While reducing plastic is especially vital, recycling it is still better than throwing it away. Follow local guidelines to learn which types of plastic your recycling facility will accept, and pay attention to the numbers on the containers and their corresponding receptacles.

Electronics

Is it worth it? Yes. Electronics components are a valuable resource: One million recycled cell phones can provide 35,000 pounds of copper, 772 pounds of silver, 75 pounds of gold, and 33 pounds of palladium. “Extracting metals from elec-

tronics results in significant greenhouse gas savings over having to take them from virgin sources,” says de Thomas.

Electronics must be recycled responsibly, or the costs could outweigh the benefits. Some e-waste recyclers outsource the heavy-metal extraction (and thus the toxicity involved) overseas to developing areas, which entails a host of environmental and human rights issues.

Reduce: Before discarding used electronics, try to have them repaired. Consider upgrading your computer’s hardware rather than buying an entirely new system.

Reuse: Locate donation bins for phones at electronics stores and phone retailers.

Recycle: Don’t just toss devices into the trash. Electronics that aren’t disposed of properly can leach heavy metals into the environment. Study the Electronics TakeBack Coalition’s “Guide to Recycling Your Electronics” (<http://goo.gl/mKtYGz>), or refer to the EPA’s page on electronics recycling (<http://goo.gl/mu3qeG>) to find a company near you that will accept your old computer, TV or mobile device. 🌱

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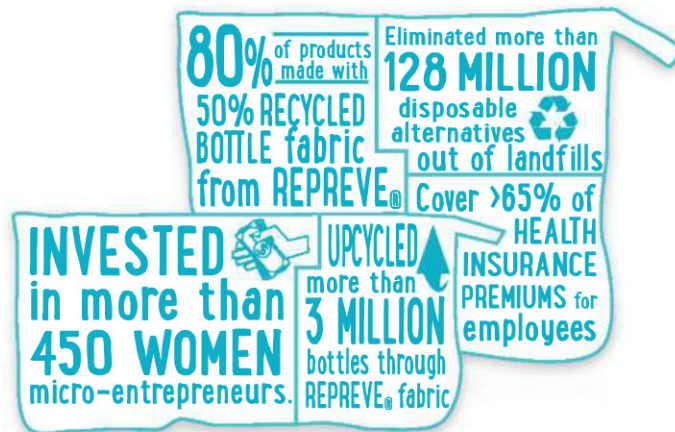
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Several MOTHER EARTH NEWS editors enjoy the benefits of standing up on the job, using wooden stands to elevate computers on their traditional office desks.

Take a Stand for Your Health with a STANDING DESK

Get out of your chair and onto your feet to burn extra calories, boost circulation and improve your posture — all while you work.

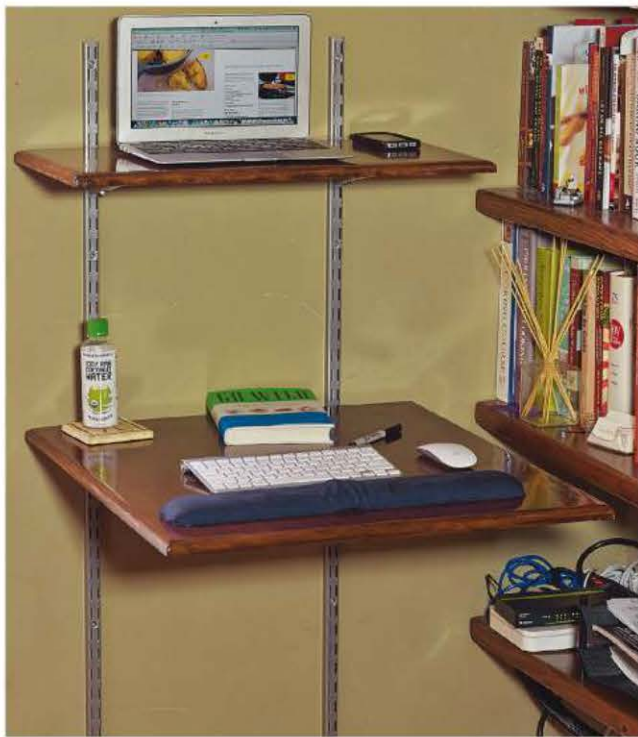
By Tabitha Alterman

Many of us are far too inactive. We start our days seated for the morning commute, transition to sitting at the office all day long, plop down again to ride home, and then relax by sitting in front of the television. The afflictions of a sedentary lifestyle have been well-researched. What countermeasures might help? One is to work at a stand-up desk that can improve brain and heart function and lessen back pain—in short, offer better all-around health. And you don't have to buy expensive commercial furniture: We've pulled together innovative examples of sitting-desk alternatives in this article, and have included links to "DIY Stand-Up Desks" on Page 76.

The Problem with Sitting

Considered from an evolutionary perspective, sitting all day is an unnatural state for *Homo sapiens*. "The workplace sitting desk is the antithesis of our native habitat," says environmental journalist Richard Manning. "The human species derives much of its refinement, advantage and ability—especially its big brain—from the basic fact that we are upright, agile apes."

In his recent book, *Go Wild: Free Your Body and Mind from the Afflictions of Civilization* (available on Page 97), Manning makes a strong case for movement as the quickest path to brain and body health. A mountain of research points to inactivity as a contributing factor to our most chronic disorders, among them obesity, heart disease, hypertension, stroke, Type 2 diabetes, cancer and



Stand-up desks built by the author to use in her home include wall-mounted adjustable shelves (above) and a rollable audiovisual cart outfitted with a keyboard tray (right).



asthma. Our sedentary lifestyle has even been implicated in causing reduced brain function.

Much of what we know about the consequences of being sedentary comes from studies that have examined television viewing. Recent research has confirmed what existing TV-watching studies show: We burn more calories when we don't sit—to the tune of hundreds per day. Barry Braun, professor of health and exercise science at Colorado State University, says a person would have to replace about four hours of sitting with standing to gain the benefits of a 30-minute walk. Nevertheless, there may be orthopedic and postural benefits to standing aside from the caloric expenditure. Engaging our muscles and increasing blood flow by standing up can result in better muscle tone; improved blood sugar, circulation and posture; reduced injuries resulting from stiff muscles; elevated cognition; and enhanced mood. Just by standing, a body's metabolism becomes remarkably more effective.

Setting Up a Standing Workstation

Depending on your budget, the kind of work you do, and your inclination toward DIY projects, you have many stand-up desk options. Ready-made choices range from treadmills with attached computers to adjustable-height desks to extra-tall desks.

When I began to look for stand-up desks a few years ago, I found, to my dismay, that many sleek options cost upward of \$1,000. Eventually, I came across a \$150 bright yellow, portable cart for audiovisual equipment, retrofitted with a keyboard tray. I consulted the Occupational Safety and Health Administration (OSHA) recommendations for ergonomic workstations, online at <http://goo.gl/YAdEGj>, and I learned that the top of a computer screen should be located at or just below eye level, with the keyboard positioned at about elbow level. Because my laptop setup

didn't meet those guidelines, I bought a separate keyboard so I could adjust its height, and so I could add a stack of books underneath my laptop to raise the screen up (see above, right).

I began reaping the benefits immediately. I'd describe the feeling of working from a stand-up desk as being activated—like having a “be present” switch turned on in my head. I also find that standing makes me more likely to walk around and be more active overall.

I used the AV cart as my desk for a couple of years, until my partner opted to try a standing workstation as well, and agreed to design an even better one for me. The result was an adjustable standing desk that's wall-mounted (above, left). We decided to use extra-long wall brackets so the larger of the two work surfaces could be lowered enough to be a table for our toddler.

If you're not in a position to create a standing workstation from scratch, you can retrofit a traditional desk to become a stand-up desk, which is what several MOTHER EARTH NEWS editors have done. Their innovation consists of stands to hold their monitors, plus a stand for the keyboard and mouse (see photo, Page 73). What makes the stands especially useful, says Managing Editor Jennifer Kongs, are their large openings that function as bookshelves and the smaller cubbies for staplers, notepads and the like.

To build your own stands, calculate the heights you'll need based on OSHA's guidelines (see “The Write Desk,” Page 76) and then

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consult "How to Build a Box" at <http://goo.gl/N7yMu3>. The keyboard stand is essentially a box with an open base and a slightly overhanging top.

Sitting, Sometimes

I quickly realized that I'm naturally inclined to perform certain tasks while standing (mostly familiar and administrative) and others while sitting (anything new or creative). Editors Amanda Sorell and Hannah Kincaid also prefer to sit for tasks requiring intense focus. Kongs, Sorell and Kincaid use extra-tall chairs that can be lowered to the proper height for seated work. "What I love about my desk," Kincaid says, "is the ability to do whatever feels good in the moment without being restricted." You can search used furniture stores for deals on adjustable extra-tall chairs.

Standing for too long can also be hard on your back, so that's another reason to have an ergonomic workstation that includes both standing and sitting options. You can also use a cushioned floor mat or elevate one foot at a time on a footstool when standing.

DIY Stand-Up Desks

Check out these do-it-yourself concepts and plans online:

- **6 DIY Standing Desk Projects:** <http://goo.gl/Qy7LuL>
- **6 Stand-Up Desks for Computers:** <http://goo.gl/dcaJzN>
- **5 Affordable DIY Standing Desks:** <http://goo.gl/ZppSui>

The Write Desk

When setting up a standing workstation, think about the type of work you do. Do you use a laptop? Multiple monitors? Do you need plenty of surface area for paperwork? Space for books and office equipment? Your answers should help you decide whether you need an adjustable standing desk, adjustable chair, portable desk, retrofits or a combination. Be sure to implement the following OSHA guidelines for an ergonomic workstation:

Body. Your legs, torso, neck and head should be in line.

Floor. Padded floor mats will aid in your comfort. You may also find relief by using a footstool to elevate one foot at a time.

Screen. Place the monitor 20 to 40 inches away from your body and directly in front of you so that your entire body faces forward. The top of your screen should be at or slightly below eye level.

Keyboard and mouse. Your keyboard should be directly in front of your body, at a distance that keeps your elbows by your side. You may find it necessary to install a keyboard tray and wrist rests.

Optional chair. If you use a tall or adjustable-height chair, make sure that your thighs are parallel to the floor, and that your feet are supported by a footrest slightly in front of your body. Or, ensure that you can lower your chair to rest your feet on the floor. 🌳

Contributing Editor Tabitha Alterman researched this article while standing up, wrote it sitting down, and edited it standing up.

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ID and Prevent 6 COMMON TOMATO DISEASES

Our gardening guru details how to spot symptoms of tomato afflictions and adopt strategies to keep your plants healthy.

By Barbara Pleasant
Illustrations by Lyn Wellsand

Ah, tomatoes—revered by many as the quintessential home garden crop. Every gardener who grows them hankers for a hearty yield, but many may not realize that tomato diseases, which can strike quickly and be difficult to recognize, pose one of the biggest potential roadblocks to good production. Follow these instructions on how to recognize the telltale signs of common tomato diseases, and discover proactive steps you can take to help prevent pathogens from infecting your prized plants.

Early Blight

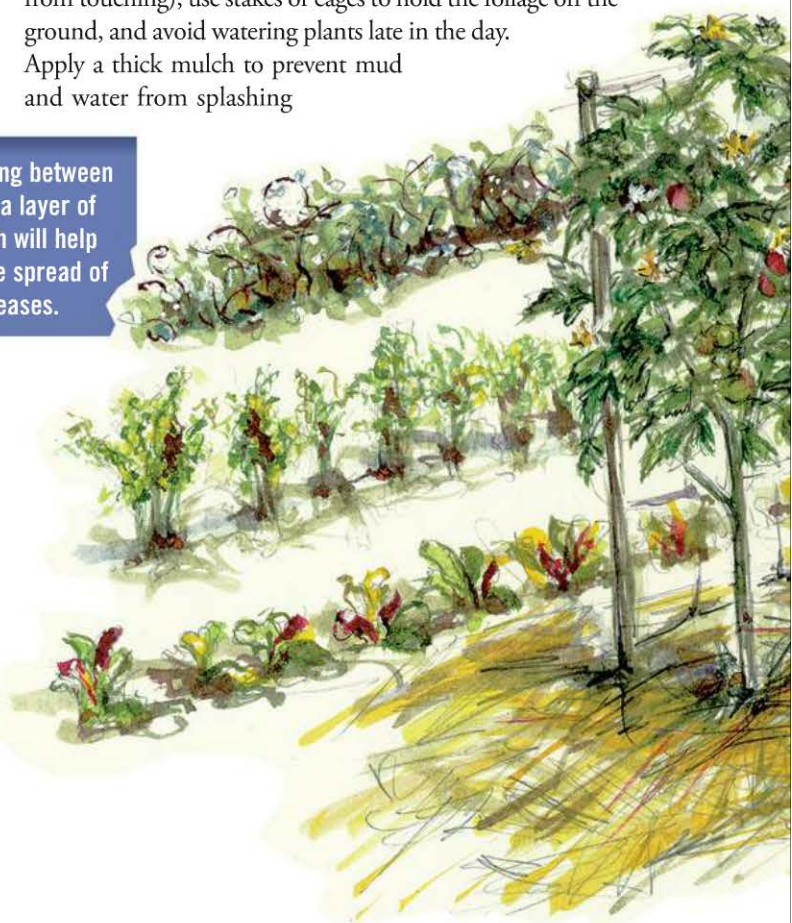
The fungus *Alternaria solani*, which is present worldwide wherever tomatoes or potatoes are grown, causes early blight. Prevalent throughout the United States, the fungus overwinters on tomato plant debris and perennial tomato-family weeds, including hairy nightshade, horsenettle, jimsonweed, sacred thorn-apple and silverleaf nightshade. Spores can then spread to tomatoes in spring via wind or splashing rain, but they need wet leaf surfaces to germinate and grow. Low leaves that drip with dew each morning provide perfect conditions for early blight.

In early summer, when tomato plants begin to set fruit, brown spots will develop on the lowest leaves of infected plants. As the spots expand and become more numerous, leaf tissues between the spots may turn yellow before the leaf eventually withers. Use a magnifying glass to examine spots that are about a quarter-inch across. Early blight causes spots with outer rings around a bull's-eye center. In most cases, early blight damage will be limited to the lower third of tomato plants (where conditions are more damp),

and these plants may manage to produce a good crop. In rainy years, however, early blight can take down entire plants.

If early blight is a threat in your area, rotate plants to a new patch of ground each year, and keep tomato foliage dry. Make sure plants aren't crowded (space them far enough apart to prevent plants from touching), use stakes or cages to hold the foliage off the ground, and avoid watering plants late in the day. Apply a thick mulch to prevent mud and water from splashing

Wide spacing between plants and a layer of thick mulch will help fend off the spread of tomato diseases.



onto plants, as moisture on lower leaves can activate the disease. Control tomato-family weeds that grow close to your garden, and think twice before adopting volunteer tomato plants that appear early in the season—they may be loaded with an invisible cargo of early blight spores. As soon as you see the first early blight leaf spots, use pruning shears to clip off all leaves within 12 to 18 inches of the ground, removing no more than 20 percent of the plant's total leaf mass.

Resistant varieties are new and few, but they're worth growing in areas where early blight is a severe problem. Try 'Defiant,' 'Jasper' or 'Mountain Magic.' (See the chart on Page 82 for the disease resistance codes often listed in seed catalogs.) Copper is an organic fungicide that helps prevent early blight, but it's not especially safe. It's "allowed with restrictions" by organic-certification rules. With repeated use, it can build up to levels in soil that can be toxic to earthworms.

Fusarium Wilt

Fusarium oxysporum f. sp. *lycopersici*, a soil fungus present in warm to moderate climates worldwide, causes fusarium wilt. Where summers have many days above 80 degrees Fahrenheit, fusarium is the most widespread tomato disease. After entering a plant through its roots, the fungi multiply in the plant's vascular system, often caus-

ing the leaves on individual stems to show symptoms first. Infected plants tend to grow normally until they begin to set fruit. At that point, leaves on some stems will start to yellow and wilt severely in midday sun. As the disease progresses, more stems and leaves will yellow and wilt, until the plants eventually collapse and die. No



Prune off low branches to reduce the number of early blight spores and improve air circulation around the base of your plants.



other common tomato disease causes such distinctive yellowing. If you pull up an infected plant and cut across a dying stem, you'll see brown streaks within.

After this fungus is present in soil, it's there to stay, as it doesn't need a host plant. To prevent major fusarium problems, rotate crops so that tomatoes aren't grown in the same soil more often than once every four years. Fortunately, many varieties are resistant, and you can grow susceptible varieties in large containers filled with packaged potting soil.

Late Blight

Phytophthora infestans, an algae-like micro-organism that thrives in wet conditions and is often referred to as a "water mold," gives plants this disease. Late blight, which requires a live plant host, is most prevalent in years in which summers are mild and rainy. Infections have become increasingly common in the Northeast and Mid-Atlantic states.

Also a problem for potatoes, late blight destroys plants' leaves, thus depriving plants of their photosynthetic energy supply. Plants



Leaf symptoms, from left: Bull's-eye lesions indicate early blight, bronzing suggests tomato spotted wilt, and yellow V-shapes signal verticillium wilt.

can become infected at any age, whenever leaves are wet for more than eight hours and temperatures are between 64 and 72 degrees. Growing in a hoop house isn't a solution, because its high humidity level can encourage late blight.

Diseased leaves will show tan, wet patches and begin to droop. If wet weather persists, plants will shrivel and die within two to three days, as if they had melted. Infected plants may survive if the weather turns warm and dry, but any eventual fruits will likely have leathery patches. Late blight often overwinters on infected potato tubers and on weeds in the nightshade family, but it has also been found on commercial seedlings. Never accept tomato seedlings that show suspicious leaf spots of any kind. In high-risk areas, plant any of the recently developed

late blight-resistant tomatoes, such as 'Iron Lady.'

Nematodes

Root-knot nematodes (*Meloidogyne* species) and less-common sting nematodes (*Belonolaimus longicaudatus*) are microscopic,

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parasitic roundworms that infect tomatoes. They flourish in sandy soils in warm climates.

Plants that have nematodes living on their roots will grow more slowly and will wilt on hot days more than uninfected plants would. Foliage will often turn light green to yellow. Nematodes may infect several plants growing close together, while plants only 10 feet away may be fine. Symptoms will usually worsen as summer progresses and nematode populations increase.

Nematodes feed on tomato roots and cause the formation of knobby galls and swollen sections, which deprive aboveground plant parts of moisture and nutrients. Dig up an affected plant to make a clear diagnosis. Root-knot nematodes form galls of various sizes, which will look like tumors on the roots. Sting nematodes cause plant roots to grow into a tight, swollen mass close to the base of the plant.

Rotating crops and growing resistant varieties can help prevent problems. Keep beds weeded, because many weeds serve as nematode hosts. In high-risk areas, such as the warm coastal plains, some gardeners move their vegetable beds every few years to stay ahead of nematodes. Certain French marigold varieties, such as 'Tangerine,'

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Tomato Disease	Abbreviations
Early blight	EB
Fusarium wilt	F, F1, F2 or F3
Late blight	LB
Nematodes	N
Tomato spotted wilt virus	TSWV, TSW or SWV
Verticillium wilt	V

'Petite Harmony' and 'Nema-Gone,' reduce nematode numbers if used as a densely planted cover crop (plant your tomatoes in the marigold area the following spring). Solarizing infested soil under clear plastic—especially during late summer, when nematode populations are at their highest—may also help.

Tomato Spotted Wilt

A plant virus of the *Tospovirus* family, this disease is spread by tiny sucking insects called thrips. It's most

common in warm climates, including the South, but has shown up across North America. More than 150 plants play host to this virus, and it can spread via infected vegetable plants, weeds, tobacco plants and many flowers, including dahlias and zinnias.

At least nine species of thrips, including common Western flower thrips, can transmit the virus to tomato plants. Thrips, which are less than an eighth-inch long, can fly or simply catch a ride on strong winds. After the virus enters tomato plants via thrips' saliva, it multiplies and interferes with the plants' cellular signaling pathways.

Soon after infection, the plants will become stunted, and the young leaves at the tops of the plants will develop numerous

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Circle #6; see card pg 113

small spots that cause the leaves to appear slightly bronzed. The edges of affected leaves will curl and become distorted and stiff. Plants will begin to droop and wilt, and new growth will start to die back. Sometimes part of the plant may live longer, creating a one-sided appearance. Any fruits produced by infected plants will show numerous yellow to brown rings, and they'll usually rot before they can ripen.

If tomato spotted wilt virus shows up in your garden, grow resistant varieties the following season. Controlling thrips is nearly impossible, but reflective film mulches may reduce their numbers in your tomato patch. Try growing plants to attract minute pirate bugs, which are natural predators of thrips. In greenhouses, monitor thrips using yellow or blue sticky traps.

Verticillium Wilt

Verticillium albo-atrum and several closely related fungal species cause this disease. Present in soils worldwide, verticillium thrives in cool, moist soils and is most common in the Northeast.

After entering a susceptible tomato plant through its roots, the fungi multiply in the

plant's vascular system, causing it to struggle or fail. Leaf tips on lower leaves will turn yellow in a distinctive V-shaped pattern, and they'll then become brown.

As the plants grow, many leaves will show one-sided yellowing on either side of the main leaf vein. Later in the season, deterioration of the plant's vascular system will make it difficult for roots and stems to deliver water and nutrients to leaves and fruits, so the plant will wilt. Supplemental water won't perk up an infected plant, and a few warm, sunny days will cause it to shrivel and die, often with some leaves still green.

If you pull up an infected plant and cut across the main stem at a point that was within 12 inches of the ground, you will see light-brown discoloration within the stem. Fruits from infected plants are edible, but they usually don't ripen properly.

To combat verticillium wilt, grow any of the widely available resistant varieties, and rotate plantings so you're not growing nightshades in the same soil more often than once every four years. Plants that show only mild symptoms can sometimes be nursed through the season with mulch and regular watering.

TRY THE TOMATO CHOOSER APP!

For a super-slick way to find disease-resistant varieties and search for other desired tomato attributes, check out our new *Tomato Chooser* app, which allows you to sort through and learn about 333 tomato varieties. Find it at www.MotherEarthNews.com/Tomato-Chooser. To help you more accurately identify a disease you spot in your garden, you'll also find a list of common "look-alikes" for each of these tomato diseases in the app, or in the online version of this article available at www.MotherEarthNews.com/Tomato-Diseases.




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5 Ways We Can Scale SUSTAINABLE FARMING



Want to grow your budding farm business into a viable enterprise? These expert recommendations can make a big difference.

Those of us dedicated to sustainable agriculture have distinct ideas about how to define it and what it should look like. We use adjectives like “soil-building,” “water-conserving,” “air-cleansing,” “people-respecting,” “nutrient-enhancing” and “animal-honoring.” Adhering to these attributes is a great litmus test for Earth-friendly agriculture.

But I’d like to add another measure to the mix: “scalable.” Some 25 years ago, when sustainable farming folks had first begun asking me to speak at their conferences, I’d finish with my song and dance, and inevitably the first question would be, “That’s dandy, Joel, but does it scale up?”

It was a fair question. At that time, Polyface Farm was 100 acres of open land that my parents had owned since 1961. They had worked outside jobs to support the farm, but I was determined to make my living farming full time. We were serving only about 200 families with products from our animals. Our family was the only labor force. We didn’t make deliveries, serviced no restaurants, and required customers to order in advance and drive out to the farm for scheduled pickups.

It was quaint, family-scale, highly profitable—and more fun than we could have imagined. A lot of work, yes, but it was noble, sacred, family-centric work. The past 25 years have brought enormous changes. These days, when I finish a presentation, the first question most often is, “That’s dandy, Joel, but does it scale *down*?”

Expand Homegrown into a Farming Business

What happened in those 25 years to change the question? Our farm grew, that’s what happened. Today, we lease nine properties, manage 1,200 acres of open land, and graze pigs on acorns and other goodies in the forest, which leverages an additional 800 acres. We’re running nearly 1,000 head of cattle, 1,000 hogs, 4,000 laying hens, 25,000 broilers and 2,000 turkeys. Our 20-person staff includes delivery drivers, marketers, accountants, subcontractors, apprentices, apprentice managers, interns and office workers, and we now serve 5,000 families, 50 restaurants and 10 retail outlets.

I don’t provide this information to brag, but simply to highlight the growth we’ve experienced and underscore the scalability of just one sustainable farming operation. We didn’t envision this. We never had a business plan. It just happened.

But now that we’re big enough to be considered a business, beginning farmers and folks with smaller acreages are looking at our model and asking, “Where do we fit in?” I’ve spent some time pondering the whole matter of scale, and I’ve concluded that scalability is indeed a benchmark of successful sustainable agricultural prototypes. The beauty of our farm’s growth is that it has required almost no borrowed money—and the



Scalable systems, such as these multipurpose structures, enable producers to expand incrementally.



infrastructure is still worthless, at least to a bank.

Let me explain. My first portable henhouse, which we've dubbed the "eggmobile," was a 6-by-8-foot rectangle with 3-foot-tall walls, mounted on bicycle wheels, and it housed 50 laying hens. I built this movable chicken coop out of scrap for a total investment of about \$100. It was light enough to push around by hand. Electrified poultry netting had not yet been invented, so I built 4-foot-tall and 10-foot-long poultry-netting panels out of quarter-inch steel rod. Creating two sets of three eggmobles allowed me to set them up in a hexagon pattern.

That project worked so well that the next year I redesigned the henhouse to mount on the tractor's three-point hitch. Connecting the eggmobile and tractor allowed me to run the chickens behind the cattle and let them range freely. The birds tore into the cow manure, spreading out the patties and eating all the fly larvae. I knew I was on to something.



The author's portable broiler pens require minimal investment and can be easily replicated.

Because hooking the henhouse up to the three-point hitch was laborious, the following year I built a bigger coop and I mounted it on a mobile-home axle. With 100 birds in there, I thought I had arrived at the big leagues. But the year after that, I decided to be more efficient, build more houses, and increase the number of chickens. Besides, customers loved the eggs and were asking for more.

Today, we run these eggmobles in pairs, hooked together, with each holding 400 birds apiece, creating flocks of 800

laying hens. We have six pairs of eggmobles. Some are not quite as big and only house a 500-bird flock. After supplemental feed costs and labor, the largest expense is the hens, which cost about \$5 apiece to replace with new pullets. We sell our eggs for \$4.50 a dozen and net about \$1 after labor and expenses.

Stay Within Your Means

The eggmobile model was profitable as a tiny backyard prototype because the infrastructure cost next to nothing. The

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Circle #42; see card pg 113



One tractor can perform multiple duties: Just add implements. Building these eggmobiles (right) requires basic skills and keeps costs low.

scheme could scale up with cash flow from the enterprise because the subsequently larger eggmobiles were also cheap and could be added as demand grew. We didn't need to build the whole fleet in a day; we could add more of our movable coops as our skills and the market expanded.

Contrast this model with that of industrial agriculture. If I wanted to raise eggs for the commodity market, getting started would require roughly a million-dollar investment for a confinement facility. Even if we set aside for a moment the odors, ef-

fluent, animal-welfare issues or any other such considerations, the industrial model carries an enormous entry-level price tag, which prohibits most people from entering the business, and requires farmers to take on debt. That model does not scale down—you can't start small.

A production model that is efficient or functional only at a large scale excludes low-capital beginners, which makes it exclusive—even elitist. I think a good model is an Everyman model, or what I refer to as a "whosoever will, may come" model.

On the other hand, if a production model functions well only at the tiny end of the scale, it loses credibility as a viable business. While spare-time production is wonderful, limiting an enterprise to this scale dooms it to the periphery of agricultural systems. Though I'm a big fan of tiny—and lots of tiny producers can add up to serious production volume—we need systems that can offer full-time salaries and support many families well.

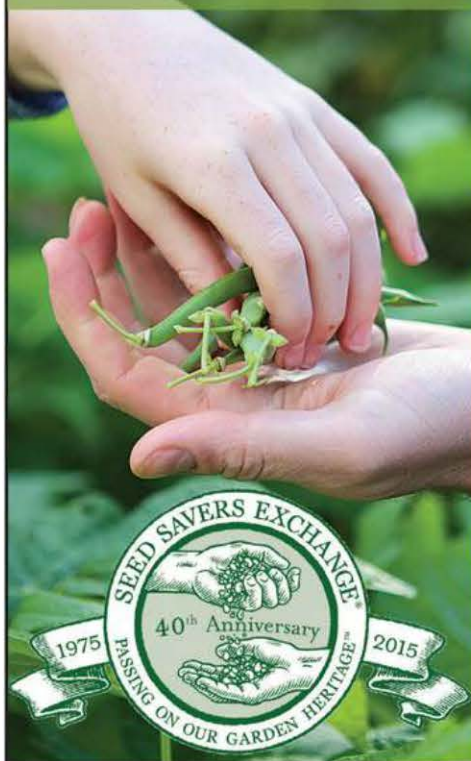
The capacity to expand or contract the size of a sustainable farming business

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Movable hoophouses, such as these turkey shelters, can be useful for farms of various sizes.

must be seamless up and down the scale in order to make room for any willing, knowledgeable participant to take up the profession. The industrial agriculture model presents itself as the only economically viable approach to feeding large numbers of people. We disagree with that assumption, but to prove it, we're going to have to expand our capacity—without breaking the bank and sending sustainable producers into debt. Here are my recommendations, based on commonalities among the scalable systems I've observed.

Portable infrastructure.

This includes shelter, water and fencing as well as specialized equipment necessary for your farming enterprise. Portable systems tend to be cheaper, and can be placed anywhere, whether the land is owned by the farmer or leased from a neighbor. Eliminating the cost of purchasing land will go a long way toward enabling entry into farming. This flexibility encourages more farmer-to-farmer collaboration.

Do-it-yourself infrastructure.

Possessing basic construction, fabrication and welding skills can transform an otherwise capital-intensive project into a low-budget venture. The difference in up-front costs between doing these essential tasks for yourself or hiring them done can make or break profitability.

Additional units rather than bigger buildings. Big buildings are cheaper per square foot than small ones. That economy of scale pushes us to build larger than is necessary on the front end. If expansion

can come from additional units instead of larger ones, grandiose building at the outset loses its economic appeal. Rather than imagining how big you could build something, think how small it could be while still remaining viable in function and profit. If one unit works, build more!

Multipurpose infrastructure. If you have to buy a machine or construct a


stationary building, make sure it can fulfill a number of objectives. Never buy or build a single-use structure. Let your tractor perform multiple functions by adding implements, and don't purchase any dedicated, single-function machines.

Use it. Don't let a machine or building sit empty or idle. Depreciation happens regardless of whether something is being used. If you own it, use it. Rent land, equipment and machinery as long as possible and purchase as a last resort, when you have enough volume to justify the expense.

A truly sustainable agricultural model that can move seamlessly from small to large and large to small represents the best farming practices—an adaptability that fosters hope for how our side can continue to grow itself. 🌱

Joel Salatin practices sustainable agriculture with his family on Polyface Farm in Virginia. His books include *Fields of Farmers*; *Folks, This Ain't Normal*; and *The Sheer Ecstasy of Being a Lunatic Farmer*. See Page 97 to order.

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Label and Sell Your Goods with Upcycled Chalkboard Signs

Clearly marked prices are an easy way to increase farmers market sales. I often see tables with beautiful carrots and gorgeous greens passed by simply because people can't read the prices. When I transitioned from a shy farmers market shopper to a vendor, I wanted to make sure people could easily read prices at my booth. I loved the look and functionality of chalkboard signs, but they were expensive, didn't come with stands, and were hard to find locally.

My partner and I decided to make chalkboard signs out of recycled materials. We used free-standing picture frames (50 cents apiece from a thrift store), chalkboard paint (\$10) and regular paint (free, because there's always some nearby) to make signs for a fraction of the price of store-bought versions.

To begin, we removed the panes of glass from the picture frames, and then cleaned the panes and empty frames with rubbing alcohol. We then painted the glass panes on one side with the chalkboard paint and laid them on newspapers to dry before applying a second coat. Next, we painted the frames purple to match each other. After letting the paint dry thoroughly—which can take up to a week—we reassembled the frames and chalkboard panes. The results are great, and with picture frame chalkboards, you can choose whatever size you need, change prices throughout the season, and clearly display the cost of your goods!

*Gretchen Garcia
Albuquerque, New Mexico*



An Alternative Litter

I didn't like the artificial perfumes in my cats' litter, nor the waste that the litter created. Even the "eco" litters were lacking—they smelled bad, didn't clump and were expensive. So I spent months experimenting with materials to use for an alternative cat litter, and I eventually found that straw or pine pellets, which are usually sold as horse bedding, worked best.

I used the straw pellets until my local Agway stopped carrying them. Now I use the pine pellets, which work just as well. These pine pellets have a number of benefits. They're cheap—one 40-pound bag costs \$6 and will last my two cats close to a month and a half. And they don't smell bad—if anything, they smell kind of woody or grassy. Plus, liquid causes the pine pellets to immediately disintegrate into sawdust, so it's easy to spot and remove urine.

*Hannah Dobbz
Pittsburgh, Pennsylvania*

Buy 1, Get 19 Free

Instead of buying basil seedlings from a nursery, I buy one container of fresh, live basil from a supermarket. One bunch of live basil often contains between 20 and 40 individual plants; some are as tall as 12 inches.

After you get home, remove the pot and soak the roots in a shallow container of water. Start by gently separating the ball of roots into two, and then divide each half into two again, and so on, until you have separated the entire clump into single plants. Keep the roots submerged in water until you're ready to plant. After you plant the basil seedlings in your garden, keep them soaked and shaded for a few days until they perk up and stand straight. You'll now have a lovely, early basil patch that will last through fall and that cost you one-tenth the price of nursery basil plants.

*Don Krause
Glendale, California*

From Bags to Riches

Plastic feed bags need not be trashed; instead, they can be transformed into a homemade tarp. Save bags from livestock, cat or dog food until you have a good pile, cut to flatten, and then sew together with heavier coat thread. I recommend double-stitching for durability.

This makes a cheap and efficient homemade tarp that you can use to cover woodpiles, farm equipment and more.

*Sarah Kyrie
Argyle, Wisconsin*

Better Growth with Garden Jugs

We use large quantities of white vinegar as a natural weedkiller, and, as a result, we end up with a lot of plastic gallon jugs.

Although they're recyclable, I'd rather reuse them. I cut the bottoms out of the empty plastic jugs and place the tops over our broccoli and cabbage starts to protect

the seedlings from our cold, early-spring storms here in the Pacific Northwest.

Even in our concrete raised beds, spring still has a slow beginning. I planted some starts without the homemade mini-greenhouses, for comparison, and the ones grown under jugs were bigger!

Sue Anderson
Gaston, Oregon

Mysost: A Whey Better Cheese Recipe

When making cheese, you generally end up with a great deal of leftover whey that you need to find a use for. The answer is *mysost*. *Mysost* is a traditional Scandinavian cow's milk cheese made without cultures. It requires only whey, some cream and a little salt. (When made with goat's milk, it's called *Ekte Gjetost*.) To start, you need at least a quart of whey, although more is preferable if you want a decent amount of cheese. Make sure the

whey hasn't already been salted before you begin. Pour the unsalted whey into a large stockpot, and set it over low heat for five to six hours. Keep the mixture just below a simmer. Eventually, it will cook down to a thick brown syrup.

If you want to stop at this point, you can scrape the cooked whey out and use it as a spread on toast or crackers. This is called *prim*. The flavor will be sharp and tangy. After the *prim* cools, it will solidify into a hard chunk. If you don't want to stop at the *prim* stage, then you can add a few tablespoons of cream and a pinch of salt and continue cooking. Be sure to stir now and then to prevent burning. When the mixture reaches the consistency of caramel, scrape it out into a parchment paper-lined cheese mold and allow it to cool. After it has cooled, *mysost* can be sliced and served like any other cheese.

The process for making this whey cheese is extremely slow, but it requires



A Radiantly Good Idea

We live in gardening Zone 4a, and in early spring, we use our mud porch as a make-shift greenhouse. We have less space than the average greenhouse, so we have to make every square inch count. One of the clever things we've done is use our brooder, stocked with chicks, to heat the porch. We then place our seedling flats above the chicken brooder's heat lamps, on a table or atop 2-by-4-foot frames covered with hardware cloth. The heat from the brooder radiates up, increasing our germination rates dramatically and allowing us to start plants earlier. The chicks exhale carbon dioxide, which improves seedling growth, while the plants release oxygen for the birds.

John M. Williams
Aurora, Wisconsin

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Circle #49; see card pg 113

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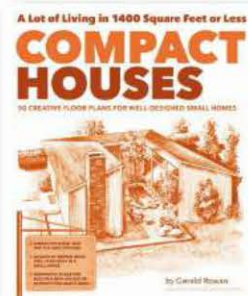
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By Gerald Rowan

Discover the huge possibilities to be found in a small house! Whether you're building from scratch or retrofitting an existing structure, these 50 innovative floor plans will show you how to make the most of houses measuring 1,400 square feet or less.

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Move Over, Kitty

Whenever my wife and I visit yard sales or a flea market, we keep an eye out for cat litter boxes with lids. They usually sell for a couple of dollars. We give the litter boxes an extra scrubbing at home, and then use them as nesting boxes for our hens. We find that they're easier to keep clean than wooden nest boxes, and they're cheaper, too.

Tom Preble
Peyton, Colorado



little effort, and the finished product is well worth the patience needed.

Micah Janzen
Riley, Kansas

Citrus-Fueled Fire

Dried citrus peels make fantastic kindling. When starting a fire or rekindling a dying flame, a handful of dried citrus peels will prove remarkably flammable. I speculate that the concentrated oils found in the peels may have something to do with the intense display of flame and heat they spawn.

John Atwell
Kurtistown, Hawaii

Simple Skin Care

Why buy expensive skin toner when you can purchase witch hazel water for less than \$4? Witch hazel water removes makeup residue and is gentle on skin. To make a scented toner, combine 1 part rose water with 1 part witch hazel.

For stressed, dry skin, apply extra-virgin olive oil after you take a shower or wash your face. Olive oil is much more affordable than fancy moisturizers from department stores.

Michelle Musetti
Deland, Florida

From Salad Storage to Seed Starter

We were in need of some dark green leafy vegetables last January, so I started buying 1-pound plastic boxes of organic baby spinach. One day, I looked at the latest box and saw a mini-greenhouse! The clear plastic salad container was perfect for seed starting, and it even had an attached, hinged lid for ventilation. All I had to do was remove the label and glue.

I filled my plastic seed-starting box about one-third of the way with soil, watered the soil until evenly moist, and

Deter Garden Detritus

After years of being annoyed with leaves and dirt and other garden debris clogging my watering can spout, I finally did something about it. I used an old coat hanger to rig a frame that outlines the opening of my watering can. The frame connects to the base of the can's handle. I wrapped a piece of old window screen around the frame, and—voilà!—no little bits of gunk falling into the can, and no mosquitoes laying their eggs in there either!

Janice Ho
Hannibal, Missouri





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World's largest ever permaculture event - page 35

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planted the seeds. I closed the lid and labeled each row by writing the names of the seeds on the plastic. I placed the container in a sunny spot near my back door, and within one week, little seedlings were popping up! I checked the moisture level each day to make sure there wasn't any mold growth, and I left the lid ajar when I needed to adjust the moisture level and temperature.

*Kim Robertson
Easton, Pennsylvania*

Out of Beer? A Second Method of Slug Control

The type of oyster shell that chickens eat is a good, safe, cheap and readily available slug repellent. Scatter the crushed oyster shell wherever slugs are a problem, or make a band around whatever needs protection. Oyster shells are alkaline, so avoid this tip if you have alkaline soil (high pH), and don't scatter oyster shells on or close to acid-loving plants, such as blueberries or azaleas.

*Susan A. Mathis
Bishopville, South Carolina*

Tick-er Tape Parade

We've found a reliable way to prevent tick bites. We keep a Scotch tape dispenser



handy, and when we find a tick, we simply laminate it! When we get into a whole nest of ticks, we grab our handy tape dispenser before the ticks have a chance to bite, and we quickly tape them all up. All you have to do is pick up the tick with the sticky side of the tape, and then fold the tape over itself so the tick is trapped in the middle. It's such a clean and easy way to dispose of these pesky critters before they can even latch on to you.

*Kelly Fournier
Lobelville, Tennessee*

We Pay for Top Tips

Do you have handy home, farm or garden advice? We pay \$25 to \$100 for each tip we publish, plus \$25 for each photo or video we use. Send your tips to Letters@MotherEarthNews.com.

A Little Milk with Your Coffee?

My family and I had just moved to a home on 30 acres when we decided we wanted to try raising a dairy goat. After building a little goat hut out of cedar trees from the pasture, our next step was to build a goat-milking stand. I had a coffee table that we weren't using that had a sturdy frame and a 2-by-4-foot surface, which was plenty of room for our Saanen goat to stand on. I braced the coffee table to help support the legs, and then I added two 1-by-6-foot boards for the stanchion. I attached a food shelf with a removable tray, and the stand was complete.

The total cost of this homemade goat-milking stand was about \$15, plus a little sweat equity. We made the money back in no time, as our pretty white Saanen gives us a gallon a day of the sweetest, freshest milk you've ever tasted.

*Whit Erwin
St. Clair, Missouri*





real food



50 SIMPLE SOUPS FOR THE SLOW COOKER

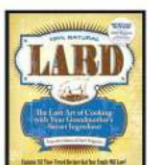
Inside *50 Simple Soups for the Slow Cooker*, Lynn Alley presents bold combinations for 50 new vegetarian and vegan soup dishes that are as hearty as they are flavorful. A few classics, such as

Ribollita and French Onion, mingle with many unique offerings, including Swedish Rhubarb Raspberry Soup, Garnet Yam Soup with Coconut Cream, and much more. **#5580 \$16.99**



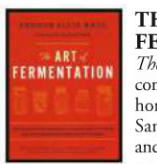
FERMENTED VEGETABLES

This guide includes in-depth instructions for making kimchi, sauerkraut and pickles, and then offers more than 120 recipes, using those basic methods, for fermenting 64 different vegetables and herbs. You'll discover how easy it is to make dozens of exciting dishes, including Pickled Brussels Sprouts, Curried Golden Beets, Carrot Kraut and Pickled Green Coriander. **#7471 \$24.95**



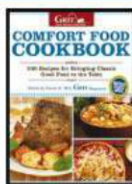
LARD: THE LOST ART OF COOKING WITH YOUR GRANDMOTHER'S SECRET INGREDIENT

Showing up at high-end restaurants and pastry shops, lard is once again being embraced by chefs, dieticians and enlightened health care professionals. *Lard: The Lost Art of Cooking with Your Grandmother's Secret Ingredient* offers you the opportunity to whip up traditional recipes and incorporate good animal fat into your diet once more. **#5901 \$24.99**



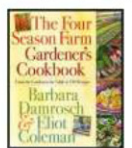
THE ART OF FERMENTATION

The Art of Fermentation is the most comprehensive guide to do-it-yourself home fermentation ever published. Sandor Katz presents the concepts and processes behind fermentation in ways that are simple enough to guide a reader through her first experience making sauerkraut or yogurt, and in-depth enough to provide greater understanding and insight for experienced practitioners. **#6077 \$39.95**



COMFORT FOOD COOKBOOK

Bring tasty, old-fashioned comfort food to your table at every meal with the *Comfort Food Cookbook*, a collection of more than 230 recipes from the archives of *Grit*, a long-running country-lifestyle magazine. Discover how easy it is to make delicious biscuits, cornbread and other classic family favorites with wholesome ingredients. **#7289 \$24.99**



THE FOUR SEASON FARM GARDENER'S COOKBOOK

The Four Season Farm Gardener's Cookbook is two books in one. It's a year-round, seasonal cookbook with 120 recipes to maximize the fruits (and vegetables!) of your gardening labor. It's also a step-by-step gardening guide full of easy-to-follow instructions and plans for different gardens. It covers properly sizing a garden, nourishing the soil, and the importance of rotating crops and planning ahead. **#6545 \$22.95**



MEALS IN A JAR

Meals in a Jar provides step-by-step, detailed instructions needed to create all-natural breakfast, lunch and dinner options that you can keep on a shelf and enjoy at any time. These scrumptious recipes allow even the most inexperienced chefs to serve gourmet dishes. Not only are these meals perfect for after-school study sessions and rushed evenings, they also make for tasty fare on family camping trips and can be lifesavers in times of disaster. **#6657 \$15.95**



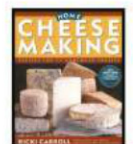
EATING ON THE WILD SIDE

Author Jo Robinson describes how 400 generations of plant breeders have unwittingly squandered a host of essential fiber, protein, vitamins, minerals and antioxidants. New research shows that these losses have made us more vulnerable to our most troubling conditions and diseases: obesity, diabetes, cancer, cardiovascular disease, chronic inflammation and dementia. Robinson explains "eating on the wild side" as choosing present-day fruits and vegetables that come closest to the nutritional bounty of their wild ancestors. **#6772 \$27.00**



THE GLORIOUS PASTA OF ITALY

Celebrating pasta in all its glorious forms, author Domenica Marchetti draws from her Italian heritage to share 100 classic and modern recipes. Step-by-step instructions for making fresh pasta offer plenty of variations of the classic egg pasta, and the book also features a glossary of pasta shapes, a source list for unusual ingredients, and a handy guide for stocking the pantry. **#7509 \$30.00**



HOME CHEESE MAKING

Discover 75 recipes for making your own cheese and other dairy products that require only basic techniques and the freshest of ingredients. You'll enjoy the satisfaction of turning out a coveted delicacy, and then using your homemade cheese in the book's recipes, which include treats such as Ricotta Pancakes, Cream Cheese Muffins and more. **#1660 \$16.95**



THE GLORIOUS VEGETABLES OF ITALY

Organized by course, this lavishly photographed cookbook lauds the latest dining trend—the vegetable's starring role at the center of the plate. Cooks of all skill levels will enjoy more than 100 recipes that mix tradition and innovation, ranging from the basics and the seasonal to the savory and the sweet. **#7510 \$30.00**

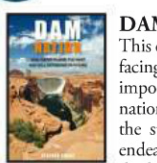


THE GLUTEN-FREE GOURMET BAKES BREAD

From her own experience, Bette Hagman knows that bread is the greatest loss for those who can't eat wheat, oats, rye or barley. In this book, she presents recipes for gluten-free yeast breads, yeast-free breads, muffins, rolls, buns, breakfast breads and crackers—a vast array of fare for the oven or the bread machine. She also includes a guide to baking with gluten-free flours and information on where you can buy gluten-free baking supplies. **#5860 \$19.99**



nature and environment



DAM NATION

This compelling book about the water crisis facing the West is grounded in history and important for residents as well as readers nationwide. This narrative weaves together the stories of human folly and grandiose endeavor that shaped the states, and reveals the background of a critical economic and political issue—how water is used and misused today. **#6662 \$16.95**



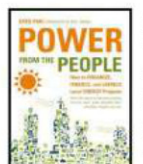
WATER MATTERS

In this collection, some of the world's leading writers, activists, photographers and artists have come together to answer water-resource questions and put us on a path for change. This book is a call to action and a solution-focused guide to solving our global water crisis. Authors take on both the good and the bad—the impact of climate change on water resources, the threat of privatization, and the challenge of thirsty agriculture, as well as a growing grass-roots water justice movement, tools for watershed literacy, and success stories. **#5280 \$19.95 \$11.85**



WATER CONSCIOUSNESS

Water Consciousness explores all aspects of the water crisis and what we can do about it. The book contains more than 50 stunning photographs and a quiz to find out your own water footprint. Beautifully designed to be accessible to readers, it provides essays on privatization, bottled water, conservation, appropriate technology, lessons from indigenous cultures, and an argument for the need for new public policy on the right to water. **#5281 \$19.95 \$13.07**



POWER FROM THE PEOPLE

Power from the People explores how homeowners, co-ops, nonprofit institutions, governments and businesses are putting power in the hands of local communities through distributed energy programs and energy efficiency measures. Using examples from around the nation—and occasionally from around the world—Greg Pahl explains how to plan, organize, finance and launch community-scale energy projects that harvest energy from sun, wind, water and earth. **#6464 \$19.95**



PLASTIC-FREE

In her quirky and humorous style—well-known to the readers of her popular blog, *My Plastic-Free Life*—author Beth Terry provides personal anecdotes, stats about the environmental and health problems related to plastic, and personal solutions and tips on how to limit your plastic footprint. This book includes handy lists and charts for easy reference, ways to get involved in larger community actions, and profiles of individuals who have gone beyond personal solutions to create change on a larger scale. **#7134 \$19.95**



PLASTIC PURGE

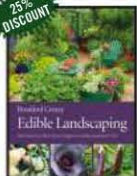
Plastic is everywhere we look. Our computers and children's toys are made of it, and our water and slices of American cheese are packaged in it. Both approachable and engaging, *Plastic Purge* provides easy-to-follow advice for how to use less plastic, thereby reaping side benefits, such as eating a healthier diet and living with less clutter. **#7465 \$16.99**

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EDIBLE LANDSCAPING

Since Rosalind Creasy popularized the concept of landscaping with edibles, interest in eating healthy, fresh, locally grown foods has swept across the nation. Creasy's expertise on edibles and how to incorporate them in beautifully designed outdoor environments was first showcased in the original edition of *Edible Landscaping*, hailed by gardeners everywhere as a groundbreaking classic. Now this updated edition presents the latest design and how-to information in a glorious full-color format, featuring more than 300 inspiring photographs. *Discount available until March 31, 2015.*
#4565 ~~\$39.95~~ \$29.96



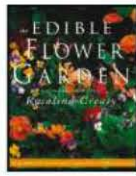
THE WAR ON BUGS

Will Allen's *The War on Bugs* reveals how advertisers, editors, scientists, large-scale farmers, government agencies and even Dr. Seuss colluded to convince farmers to use deadly chemicals, hormones and genetically modified organisms (GMOs) in an effort to pad their wallets and control the American farm enterprise. Using dozens of original advertisements and promotions to illustrate the story, Allen details how consumers and activists have struggled against toxic food.
#6828 \$35.00



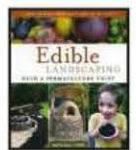
THE GARDEN PRIMER (2ND EDITION)

The most comprehensive and entertaining single-volume gardening reference ever printed now focuses on 100 percent organic methods. This updated version of Barbara Damrosch's classic guide rejuvenates the original material while maintaining its primary appeal: practical, creative ideas and the friendly style of an "old-fashioned dirt farmer."
#3896 \$18.95



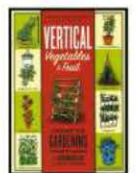
THE EDIBLE FLOWER GARDEN

The Edible Flower Garden showcases a beautiful collection of flowers with culinary uses, from candied violets and roses used to decorate appetizers and cakes; to nasturtiums placed atop a colorful shrimp salad; to daylily buds, pink clover and wild mustard flowers tossed together in a spectacular stir-fry.
#6665 \$16.95



EDIBLE LANDSCAPING WITH A PERMACULTURE TWIST

Edible Landscaping with a Permaculture Twist is a how-to manual for the budding gardener and experienced green thumb alike, full of creative and easy-to-follow designs that will guide you to having your yard and eating it, too. With the help of more than 200 beautiful color photos and drawings, permaculture designer and avid grower Michael Judd takes the reader on a step-by-step process to transform a sea of grass into a flourishing edible landscape that pleases the eye as well as the taste buds.
#7005 \$24.95



VERTICAL VEGETABLES & FRUIT

For anyone who wants to grow food in small spaces, this book has the solution: Grow up! This book shows you how to construct the site, prepare the soil, and plant and care for vegetables and fruit to produce big yields. From beans on a tipi and tomatoes on a wire archway to cucumbers on a trellis and kiwis on a clothesline, author Rhonda Massingham Hart has something to fit every gardener's needs.
#5857 \$16.95



COMPANION PLANTING FOR THE KITCHEN GARDENER

With this guide, you'll have all the information about companion planting you need in clear, concise terms and with charts and garden plans you can copy or modify to suit your needs. Starting with the basics of organic gardening, such as how to prepare quality soil and the importance of cover crops and organic fertilizer, authors Allison and Tim Greer explain the principles of companion planting, how plants interact, and how you can use that information to your garden's benefit.
#7415 \$14.95



GARDEN WISDOM & KNOW-HOW

Garden Wisdom & Know-How is a practical guide to planting and maintaining a large-scale garden. The chapters are organized by topic—garden techniques and tricks, the flower garden, the edible garden, container gardening, garden design and landscaping, attracting wildlife, and more—and packed with useful information.
#4522 \$19.95

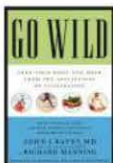


EPIC TOMATOES

Craig LeHoullier, tomato adviser for Seed Savers Exchange, offers everything a tomato enthusiast needs to know about growing more than 200 varieties of tomatoes—from sowing seeds and planting to cultivating to collecting seeds at the end of the season. He also offers a comprehensive guide to the various pests and diseases of tomatoes and explains how best to avoid them.
#7504 \$19.95

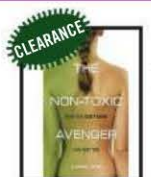


natural health



GO WILD

Harvard Medical School Professor John Ratey, M.D., and journalist Richard Manning investigate the power of living with awareness of our genetic makeup when making choices in the areas of diet, exercise, sleep and more. *Go Wild* examines how understanding our core DNA will help us combat modern disease and psychological afflictions, from depression to diabetes to heart disease.
#7449 \$27.00



THE NON-TOXIC AVENGER

After coming to terms with the fact that the autism and cancer that had impacted her family were most likely the result of environmental toxins, author Deanna Duke undertook a mission to dramatically reduce her family's chemical exposure. She committed to drastically reducing the levels of all known chemicals in both her home and work environments. Follow her journey as she uncovers how insidious and invasive environmental toxins are. Learn about your day-to-day chemical exposure, the implications for your health, and what you can do about it.
#5949 ~~\$17.95~~ \$9.56



500 TIME-TESTED HOME REMEDIES AND THE SCIENCE BEHIND THEM

Covering everything from insect bites, insomnia and upset stomach to nasal congestion, stress and heart health, this authoritative and comprehensive guide offers easy, effective recipes to bolster your resistance to illness. It shows how to ease aches and pains and manage minor ailments naturally. The book's 500 recipes contain readily available, inexpensive and nontoxic ingredients.
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renewable energy



BIODIESEL

Biodiesel is a vegetable oil-based fuel that's more biodegradable than sugar and less toxic than table salt. In this essential book, author Greg Pahl explores biodiesel's exciting potential as a fuel for vehicles, home heating and more. He includes resources for buying or making your own biodiesel.
#2278 \$19.95



WIND POWER BASICS

Wind Power Basics provides a clear understanding of wind and wind energy systems, including turbines, towers, inverters and batteries, site assessment, installation, and maintenance requirements. Whether you are considering your own small-scale wind energy system or just want a detailed introduction to the benefits and challenges of this emerging technology, this is the guide for you.
#4505 \$12.95



REAL GOODS SOLAR LIVING SOURCE BOOK

This 14th edition is the ultimate guide to renewable energy, sustainable living, natural and green building, off-grid living, and alternative transportation, written by experts with decades of experience and a passion for sharing their knowledge. Fully revised and updated, it includes brand new sections on permaculture and urban homesteading, and completely rewritten chapters on solar technology, sustainable transportation and relocation.
#7458 \$39.95



homesteading and livestock

**THE SHEER ECSTASY OF BEING A LUNATIC FARMER**

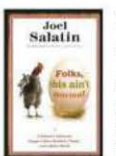
Shunned by industrial farmers, vilified by corporate agribusiness, and accused by food police of being a lunatic, farmer-entrepreneur Joel Salatin enjoys the sheer ecstasy of being surrounded by happy, frolicking animals, wriggling earthworms, and appreciative customers. This book describes the breadth and depth of the paradigm differences between healing and exploitative food systems.

#4808 \$25.00

**PASTURE PERFECT**

This book documents the many reasons why raising livestock on a natural diet of grass is better for consumers, family farmers, the environment and the animals. Includes proof that meat, eggs and dairy products from grass-fed animals are richer in numerous vitamins and nutrients.

#1975 \$15.95

**FOLKS, THIS AIN'T NORMAL**

In *Folks, This Ain't Normal*, Joel Salatin discusses how far removed we are from the simple, sustainable joy that comes from living close to the land and the people we love. Salatin has many thoughts on what "normal" is, and he shares practical and philosophical ideas for changing our lives in small ways that can have big impacts.

#5743 \$25.99

**THRIVING DURING CHALLENGING TIMES**

Thriving During Challenging Times is meant to serve as your handbook to energy, food and financial independence during this difficult era of rising oil costs, economic crises, water shortages and climate change. This book is a road map to making your home more independent, getting your bank account back on track, and discovering that digging potatoes for dinner or showering in water heated by the sun can provide the greatest of satisfactions.

#4330 \$19.95

**THE ENCYCLOPEDIA OF COUNTRY LIVING**

The essential resource for modern homesteading, *The Encyclopedia of Country Living* covers how to cultivate a garden, buy land, bake bread, raise farm animals, make sausage, can peaches, milk a goat, grow herbs, churn butter, build a chicken coop, cook on a woodstove and so much more!

#6733 \$29.95

**POSSUM LIVING**

In *Possum Living: How to Live Well Without a Job and With (Almost) No Money*, author Dolly Freed shares why she decided to shun the rat race and live off the land on a half-acre lot outside of Philadelphia. Originally published in the late 1970s, *Possum Living* is part philosophical treatise and part down-to-earth how-to, and provides a no-nonsense approach to beating the system and becoming self-sufficient—even in suburbia.

#4513 \$12.95

**COUNTRY WISDOM & KNOW-HOW**

This 476-page book is a compendium of treasured knowledge from hundreds of small booklets published as "Country Wisdom Bulletins" in the 1970s. Whether you want to build a stone fence, make strawberry-rhubarb jam or plant an herb garden, this book will explain how to make your homesteading dreams a reality.

#2793 \$19.95

**FIELDS OF FARMERS: INTERNING, MENTORING, PARTNERING, GERMINATING**

The average U.S. farmer is 60 years old, largely because young people can't get into the business, which means old people can't get out. Based on his decades of experience at Polyface Farm, Joel Salatin digs deep into the problems and solutions surrounding this land- and knowledge-transfer crisis. *Fields of Farmers* empowers aspiring young farmers, midlife farmers and nonfarming landlords to build regenerative, profitable agricultural enterprises.

#6831 \$25.00

**KEEPING BEES & MAKING HONEY**

Whether you want to start a home-based beekeeping business or simply are interested in a new hobby, you'll become an expert in no time at all. Learn the history of bees and beekeeping and get the best advice available for safely collecting the honey and wax from your bees.

#4692 \$19.99



green homes

**ZERO WASTE HOME**

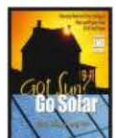
Author Bea Johnson demystifies the process of going zero waste with hundreds of easy tips for sustainable living that even the busiest people can integrate, including making your own mustard, packing kids' lunches without plastic, canceling your junk mail, and enjoying the holidays without the guilt associated with overconsumption.

#6822 \$17.00

**COMPACT CABINS**

Compact Cabins includes 62 designs for cabins ranging from 150 to 1,000 square feet, all of them affordable, comfortable and energy-efficient. For every design, you'll find detailed floor plans as well as innovative suggestions for how to take advantage of every square inch.

#4436 \$19.95

**GOT SUN? GO SOLAR**

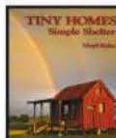
This solar power guide covers battery backup versus non-battery systems, as well as equipment needed and installation considerations. Other topics include legal and safety issues, incentives/rebates, and permits and paperwork. An extensive appendix of resources, state energy offices, system sizing worksheets, and much more turns this 160-page book into a must-have volume for anyone interested in exploring his or her power options.

#2504 \$20.00

**GREEN HOME BUILDING**

Green Home Building explodes the myth that green homes have to cost more. Using proven methods based on applied building science, authors Miki Cook and Doug Garrett show how to lower base construction costs; achieve a net zero energy home, including "zero-ing" water, waste, carbon and associated costs; live affordably into the future; and more.

#7436 \$24.95

**TINY HOMES: SIMPLE SHELTER**

Many people are rethinking their ideas about shelter, seeking alternatives to high rents or lifelong mortgages. This stunning book spotlights some 150 builders who have taken matters into their own hands by creating tiny homes (less than 500 square feet).

#5972 \$28.95

**CONVERT YOUR HOME TO SOLAR ENERGY**

With the cost of heating oil and electricity fluctuating wildly, consumers are clamoring for information on alternative energy. This book covers all the relevant technologies, including solar space and water heating, as well as photovoltaic electricity.

#4904 ~~\$24.95~~ \$13.73

do it yourself

**THE BACKYARD HOMESTEAD BOOK OF BUILDING PROJECTS**

Homesteaders, gardeners, small farmers, and outdoor-living enthusiasts will love these 76 DIY projects for practical outdoor items designed to help you live more sustainably and independently.

#7193 \$24.95

**DIY SOLAR PROJECTS**

DIY Solar Projects is filled with step-by-step projects that include solar water heaters, solar battery charging stations, solar-powered lights, photovoltaic shingles that provide supplementary electricity, solar heat pumps, and solar panel kits that generate primary home electrical service.

#5594 \$21.99

**BUILD YOUR OWN BEEKEEPING EQUIPMENT**

Tony Pisano's step-by-step illustrated instructions show you how to build everything you need, including hive bodies, supers, covers, hive stands, frames, swarm catchers and more.

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Circle #57; see card pg 113

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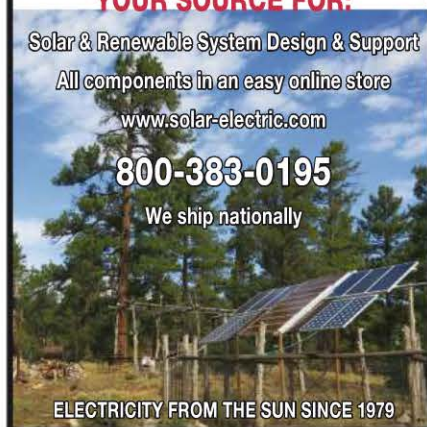
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Circle #53; see card pg 97

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3 Steps for Spring Garden Prep

What's the best way to get my garden beds ready for the first crops of the year?

Taking time in spring to build fertility and loosen soil will set you up for a more productive year. First, a few weeks before you plan to plant, work in any cover crops and then blanket your garden bed with at least a half-inch layer of good compost—a full inch would be even better. The compost will provide the soil with a fresh infusion of nutrient-rich organic matter, and improve the soil's ability to handle water and nourish your crops. Quality bagged compost can be pricey at garden centers. Unearth local sources of bulk compost by checking Craigslist

(www.Craigslist.org), or try posting to one of MOTHER's location-specific Facebook pages—find your state or province's page at www.MotherEarthNews.com/Facebook.

Second, focus on cultivating your soil. Pounding rain, gravity and other forces can cause soil to become compacted over time, so loosening it before planting should be a priority. If you plan to plant in a young bed that you need to cultivate in order to remove rocks or roots, use a shovel or digging fork to turn the soil when it's dry and crumbly (never when it's wet and clumpy, or you'll be stuck with big, brick-like clods). In established beds, you can use a broadfork to break up the soil. This will prime your soil for planting by helping it dry out and warm up, and permit roots to penetrate the soil more easily. To watch a video of a broadfork in action, go to <http://goo.gl/nfpuL5>.

Finally, apply an organic fertilizer to the degree that matches the needs of the crops you plan to plant. Light feeders with shallow roots, such as lettuce, will be fine with a small amount of organic fertilizer raked into the top few inches of soil. But for widely spaced plants that have big nutrient appetites, such as cabbage, broccoli, tomatoes and peppers, you should enrich individual planting holes with a mixture of compost and organic fertilizer just before you set out seedlings. For very heavy feeders, such as sweet corn, use a hoe to make deep trenches in the beds, and place the fertilizer in the trenches so it will be directly below the germinating seeds.

As you complete the final step, steer clear of overpriced organic fertilizers. Instead, try free grass clippings or one of the other low-cost options detailed in "Build Better Garden Soil with Free Organic Fertilizers" at <http://goo.gl/tcL6PA>.

—Barbara Pleasant



Infuse your garden with nutrients by mixing in a fresh layer of quality compost.

How Many Eggs Can a Chicken Lay?

What kind of production can I expect out of my hens each year?

Your flock's egg output will depend on many factors, including which breed you're raising, the age of your hens, the quality of their feed, whether you provide supplemental lighting in winter, and how much protection you supply from extreme heat and cold.

If you choose an industrial hybrid breed and set your birds up in conditions that prompt intense production, each hen could lay as many as 300 eggs in her first year.

Industrial birds are genetically programmed to lay so many eggs that they are spent after just two years, though, so most homesteaders don't adopt this approach.

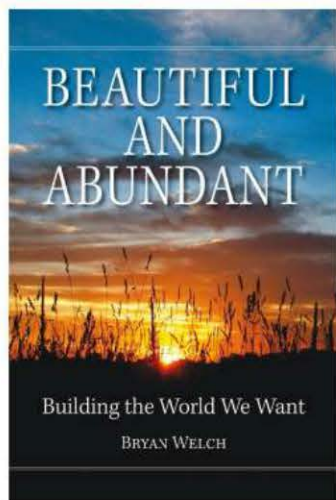
Home flocks tend to supply fewer eggs than chickens in an industrial setup. The staff at the Livestock Conservancy, a non-profit dedicated to preserving heritage breeds, reports that egg generation in backyard flocks ranges from 120 to 250 eggs per hen annually. Some breeds lay far more eggs than others.

To maximize your flock's production, you should remove older hens that are no longer laying or that are laying at a very reduced rate, and replace them with younger birds.

Originally, wild chickens laid eggs primarily in springtime for reproduction, but over centuries, humans have selected for birds that lay the most eggs year-round. Many breeds are still sensitive to day length and will naturally lay fewer eggs during the shorter days of winter.

Some people opt for artificial lighting to push their birds to continue laying through the colder months. If you allow your hens to rest in winter, they'll likely live longer. Keep in mind that you'll still be feeding them regardless of how much they're laying, so your net annual cost per egg will be higher if you let the birds have a winter break.

—Cheryl Long, Editor-in-Chief



BEAUTIFUL AND ABUNDANT: Building the World We Want

By Bryan Welch

The Publisher of MOTHER EARTH NEWS

This groundbreaking book cuts through the pessimism and denial that pervade today's discussions of sustainability and invites us to visualize a verdant and prosperous future for humanity and all the living things that share our planet. As a practical guide, author Bryan Welch offers a process for making our current lifestyles more sustainable, and he inspires us to look beyond the immediate obstacles to nurture the "destination fixation" that stimulates humanity's greatest achievements. In the lives and accomplishments of farmers, gardeners, inventors and entrepreneurs, *Beautiful and Abundant* finds a path toward a world we can proudly pass on to future generations—a world that is aesthetically beautiful, economically abundant, ethically fair and irresistibly contagious.

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MOTHER EARTH NEWS

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Ask Our Experts

Do I Need a Churn to Make Butter?

I love butter made of cream from cows raised on pasture. I can't find it in stores without spending a fortune, so I want to make it at home. Do I have to purchase a churn to do so?

You're in luck: You don't need special equipment to make butter. You can easily produce 1 or 2 pounds with an electric blender, food processor or mixer. Some folks take the no-tech route and simply shake the cream in a glass jar until the butter separates. One quart of heavy cream will yield about 1 pound of butter.

If you want to make larger amounts of butter or like the idea of using an old-



You can easily whip up butter with your mixer.

fashioned butter churn, you can find a nice selection of such implements online at www.HomesteaderSupply.com. Prices start at about \$100 for a 1.7-quart hand-crank model and climb up to \$8,650 for a 30-gallon electric churn.

Where to Buy GMO-Free Seeds

Can you recommend a reputable company or website that sells non-GMO, organic seeds?

So far, only a handful of common garden crops have been genetically engineered, and, as far as we know, no garden seed companies are knowingly selling genetically modified (GM) varieties at this time. Additionally, many garden seed companies sell Certified Organic seeds, and the certification rules prohibit genetic modification. Even if new GM varieties enter the market, as long as you choose Certified Organic seeds, you'll be avoiding genetically modified organisms (GMOs).

Two mail-order companies that offer only Certified Organic seeds are High Mowing Organic Seeds (www.HighMowingSeeds.com) and Seeds of Change (www.SeedsOfChange.com). Certified Organic, GMO-free seeds are usually labeled as such in seed catalogs and on racks.

You can also turn to companies that have signed the Safe Seed Pledge. This pledge is maintained by the Council for Responsible Genetics (at <http://goo.gl/XELJ2k>), and the companies that sign it promise not to knowingly sell GM seeds.

Unlike garden seeds, major farm crops—corn, soybeans, canola, sugar beets, alfalfa and cotton—are now predominantly GM, and 70 percent or more of foods in supermarkets directly or indirectly contain GMOs. For tips on how to forgo GM products in your everyday food purchases, read "How to Avoid Genetically Modified Food" at <http://goo.gl/zmThWD>.

—Cheryl Long, Editor-in-Chief



All offerings from High Mowing Organic Seeds are Certified Organic.

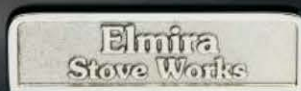
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Circle #26; see card pg 113

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JOIN MOTHER'S BLOG SQUAD

Tell Your Stories and Share Your Wisdom

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Pat Foreman



Andrea Cross



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Learn more at www.MotherEarthNews.com/Blogging-FAQ



Stock Your Pantry with Homemade Meals

Imagine coming home from a long workday to hungry kids, and you have a pantry stocked with ready-made meals that require just water and minutes of your time. Dinner has never been so satisfyingly easy as with *Meals in a Jar*, a new cookbook that takes the stress and guesswork out of planning and preparing meals.

This exciting guidebook includes more than 125 quick-and-easy, all-in-one meals. Have dinner on the table just as quickly as preparing a box of mac and cheese—but instead of store-bought junk, serve your favorite, made-from-scratch dishes. *Meals in a Jar* proves that easy-to-store, long-lasting foods can also be delicious and nutritious.

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For information on how to make your own batch of fresh butter, see “Homemade Butter: The Best You’ll Ever Have” at <http://goo.gl/S8uife>.

To find sources for fresh, local cream, check out www.LocalHarvest.org or ask people in your area by posting a query on your state-specific Facebook page (www.MotherEarthNews.com/Facebook).

—Robin Mather

Stumped about something in your home or on your homestead? Email your questions to AskOurExperts@MotherEarthNews.com, or write to Ask Our Experts; MOTHER EARTH NEWS; 1503 SW 42nd St.; Topeka, KS 66609. We’ll answer as many as we can here.

How to Keep Livestock Water from Freezing

Wetting one’s whistle can be difficult in winter! We asked our Facebook fans how they keep their livestock’s water unfrozen when the weather gets cold. Here are some of their super-cool techniques.



We always “bank” the tank with wet manure and cover it all with black plastic. We leave a hole for one-at-a-time drinking. The manure’s heat keeps the water from freezing too hard, even in our frigid Minnesota winters. —Barb Voth

We used to use electric water heaters. I have since built the solar stock tank from plans in MOTHER EARTH NEWS, which works amazingly, and I now save about \$300 per month on electricity. (To read about the DIY solar stock tank Tina mentions, go to <http://goo.gl/prb3Fq>. —MOTHER) Last winter here in the East was a true test, but we never had more than a skim of ice on the water in the morning thanks to our solar-heated unit. —Tina Durborow

My uncle built a motion-activated livestock waterer. When the cattle come for a drink, the motion sensor triggers the setup to pump water from way down in the ground. The water swirls around the bowl (which he made out of a tire), the cattle drink, and then the water drains back down. We live in Manitoba, where winter temperatures normally average minus 13 degrees Fahrenheit. —Carla Marsh

For our chickens, we set a regular incandescent light bulb inside a cinder block, put a metal water pan on top, and turn on the bulb (at least 60 watts). Presto! No ice. —Kate Hughes Brown

We use a submersible heater on a thermostat. When we get a week or two at minus 22 degrees, the heater will come on every hour. Our winter is seven months long, with temperatures mostly sitting at 15 to minus 6 degrees. Heaters make my life easier. —Andrea Procee

Most of my pastures have fresh spring water, but I have arranged mirrors in tandem to catch the midday sun and focus the sunlight on the water in our animals’ stock tank. —Joe Richardson


We mix molasses with warm water and then pour it into the water trough. The sugars in the molasses act as a natural anti-freeze. The water will get slushy but typically won’t freeze, and the molasses encourages our horses to drink. —Peter Later



Reader Tina Durborow reports that MOTHER’s DIY solar-heated stock tank design works swimmingly.

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Circle #32; see card pg 113

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(CONTINUED FROM PAGE 10)

for several years now and enjoy it very much. One subject nags at me, though: *Please* include a fair and diverse representation of opinions on eating meat.

Your coverage, from what I have been able to observe, is very one-sided. I'm quite sure that, among your readership, there are far more vegetarians than there are among the general populace. I think we'd all benefit from a deeper and wider discussion of the issues involved in eating meat.

April Ford
Sacramento, California

The Luxury of One's Own Land

Joel Salatin is a great leader in the effort to change our views on food, but I do have a comment about his article "Fighting for a Sane Food System" in the October/November 2014 issue. Salatin exposes a lot of our cultural excuses for not investing in healthy foods and offers ways to confront them; however, I thought he didn't adequately address the fact that having your own land—and being able to manage it as you wish—is not a luxury everyone has.

Many people don't have access to land to garden or raise livestock on because they are renting property they don't have the right to till, or they live in neighborhoods controlled by fascist neighborhood associations, or they live in small apartments with no land at all.

**COMING
UP NEXT**



APRIL/MAY 2015

The Best Ways to Water Your Garden
Herbal First Aid for Gardeners
How to Catch Fish
Why to Return to Grass-Fed Meat
Build a Potting Bench
Economy in the Kitchen
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Circle #70; see card pg 113

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Also, for half the United States and many of your readers, water is an expensive and limited resource. I would welcome articles about simple and efficient DIY, gravity-fed irrigation systems, as well as articles about the community gardens and shared-livestock programs available across the country, which would be helpful to anyone—but especially to the landless.

*Kolby Olson
Rancho Cucamonga, California*

Dubious About DuPont

I'm writing in response to the DuPont public affairs representative's letter defending one of the company's newest pesticides (Dear

Going TP-Free

The idea to use cloths instead of toilet paper (Country Lore, October/November 2014) is a good one, and I've heard about it before. It does seem funky to the uninitiated, but really it's no different from reusing cotton diapers.

I have my own method for saving toilet paper that I have been using for more than a year: a bidet. Bidets are quite sanitary and have been around almost as long as the flush toilet (which I haven't used at my home since 1982). With a bidet, you feel fresh and clean, and it takes less time than wiping with anything. After I "wash," I pat dry with a washcloth. I haven't used one square of toilet paper since I installed my bidet, and even though it uses warm water, the amount of water is well less than a quart. For those who would like, there are bidet attachments for a stand-alone toilet instead of a dedicated bidet.

*Joseph Kaye
Phenix, Virginia*

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<http://goo.gl/kYyatp>,
a great website for
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bidets. —MOTHER



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MOTHER, December 2014/January 2015). According to the research group Corporate Watch (www.CorporateWatch.org):

"There is hardly a single chemical toxin in which DuPont has not played a major role in developing. The company pioneered the production of sulfur dioxide, leaded petrol, CFCs and, recently, deep-well injection of hazardous waste. The company then used dubious science, political manipulation and cover-up to avoid restrictions on their use. During its 200 years of existence, DuPont has committed a staggering amount of corporate crimes."

*Norman Nyburg
Akron, Ohio*

Emergency Generator Tip

I enjoyed Steve Maxwell's piece about backup emergency generators, and I agree with his suggestion to go with a larger generator upfront (Ask Our Experts, December 2014/January 2015). I did the same thing, because we, too, have had our share of



'Leeking' a Culinary Secret

In "Steadfast Winter Companions: Growing and Cooking Leeks and Winter Squash" (December 2014/January 2015), Barbara Damrosch wrote that leeks are never eaten raw. While this may be true traditionally, there is certainly no reason why they shouldn't be. Raw is pretty much the only way I eat mine.

Leeks are excellent sliced into fall and winter salads, or as a topping on a fried-egg or salmon-salad sandwich. In any dish in which raw onions or scallions would be tasty, leeks would prove tasty, too.

*Merri Morgan
Greenville, West Virginia*

more frequent power outages of seemingly increasing durations.

However, I have found a better way to go than the “mandatory” transfer switch Steve references in his article. (My solution might not be available yet where Steve lives in Canada, but it works great here in New York!)

I bought a dual-fuel, 7,500-watt, electric-start, portable generator, added an adapter for natural gas, and decided on an interlock kit (www.InterlockKit.com). This little item absolutely ensures that the backup power supply is completely isolated from the utility supply and provides power to *every circuit in the electrical panel*, so no advance decisions are necessary to determine which outlets and appliances will have power in an emergency. The electrician and plumber cost me less than \$500 for their part of the effort.

Todd Messler
Nanuet, New York

Stop Barging In

I live in Juneau, Alaska, and about 99.9 percent of our entire food and medicine supply is shipped up here. There is no road in or out—literally, every necessity must be flown or barged in. I would like to see some articles in MOTHER EARTH NEWS about communities’ efforts to increase the viability of local food production. We have seen a huge revival of purposeful cultivation here in Juneau, and a lot more people than you might imagine are diving in. Getting the community involved is still challenging, but in spite of that, the number of gardens here increases every year!

Reena Etheridge
Juneau, Alaska

Primitive Skills

Could you include more articles about “primitive arts” in the magazine? I would like your take on things like homemade camping stoves, how to spin, making a loom for simple weaving projects, using hand tools around the farm, and other such projects.

Ayn Whytemare
Suncook, New Hampshire

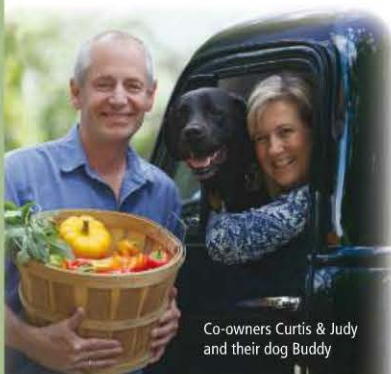
Thank you for the suggestions. In addition to the feedback we receive from readers through letters and emails, we decide which topics to cover in the magazine based on input from our online Editorial Advisory Group. Anyone who wants to weigh in on which articles we

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Circle #68; see card pg 113



should include can join the Advisory Group to take the short surveys that we send out via email about once a month. Sign up at www.MotherEarthNews.com/Surveys. —MOTHER

A Hunger for Home Ec

While I totally agree with Joel Salatin that we need to combat the notion that processed food is cheap and “integrity foods” are prohibitively expensive (“Fighting for a Sane Food System,” October/November 2014), perhaps there is an additional dilemma we need to consider. I watched a news program

Fossil Fuel Divestment

Our Facebook community had a range of opinions about “The Movement to Divest from Fossil Fuels” (December 2014/January 2015):

We are all dependent on fossil fuels because our modern world was structured that way. I support divestment because we have to change our way of thinking and press for alternatives.

—Michael Abel

I just remembered why I dropped your magazine subscription years ago. Agendas aren't welcome. —Ryan Anita Murdock

When are people going to wake up? There is no climate change! It's been proven. It's just the Earth's natural weather pattern, and the government is trying to make us pay taxes to fund something someone dreamed up.

—Doris Phillips

I don't get this all-or-nothing mentality on both sides. We should develop alternatives while still utilizing fossil fuels. It's when people go all-or-nothing that we get all sorts of unnecessary conflicts. The only fact that matters is that this planet is our home and we need to take good care of it. —Ivan Nenov



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Circle #55; see card pg 113

recently in which parents in lower-income households routinely bought expensive, highly processed, microwavable meals that don't taste good or satisfy hunger. It was puzzling, until I realized that neither the parents nor the children knew how to prepare a healthy meal from raw ingredients. They only knew how to microwave.

We need to bring back home economics classes in middle schools and high schools so students can learn basic cooking and baking skills as well as how to follow a recipe. Combine that knowledge with an electrical outlet and a slow cooker, and any number of healthy, time- and budget-friendly meals becomes possible.

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Perhaps nonprofit organizations would consider providing lower-income families with a free, basic cooking class, a recipe book and an inexpensive slow cooker. Time-crunched, working families could put dinner together before leaving for work, and, instead of stopping for fast food at the end of the day, could then enjoy a ready-to-eat, tasty meal at home with very little money or effort.

¡Viva la slow cooker!

Sally Smith
Monroe, Oregon

Words as Tools

I'd like to thank Joel Salatin for pointing out the power that words can have in his article "A New-Fashioned Food System" (December 2014/January 2015). In addition to Salatin's new phraseology, there's another small yet powerful word that can be used to attract people to more sustainable living: "free."

In today's economy, the word "free" garners immediate attention. Imagine the looks on the faces of the people at the soup kitchen when I tell them they can find medicine in their backyards disguised as weeds (plantain, comfrey and many others). I can give a friend a potted tomato plant and tell her that if she gives it a little water, it will give her free tomatoes. Free-range chickens not given any supplements will also give eggs (just not as frequently as they would if they had layer feed). Many people are not averse to putting in a little extra work if they know they can get something "free" out of it (as with gardening),



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Mary Miller Jordan and her adopted horse, Silver Lining.
 (photo: Sarah Woody)

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and some are even willing to make an investment upfront to gain benefits down the road (as with renewable energy).

My family of five has lived below the poverty level for the past 15 years, and we are always looking for ways to save money. That's what first started us down the road to becoming more self-sufficient, and a gift subscription to MOTHER EARTH NEWS gave us the tools to do it.

*Amy Smith
Lavonia, Georgia*

Baker Creek Kudos

We enjoyed reading "Sourcing Truly High-Quality Garden Seeds" in the December 2014/January 2015 issue, and we'd like to pass along to fellow readers another seed company that we think falls in line with those mentioned in the article. Baker Creek Heirloom Seeds (www.RareSeeds.com), started by Jere Gettle in 1998, is an excellent company that distributes non-GMO, non-hybrid seeds that are never sourced from Monsanto. We've had a great experience working with Baker Creek, and we've had terrific results with the produce we've grown from their seeds.

*Judith Edwards and Evan Schneider
Portland, Oregon*

The Bees' Needs

In response to the article "Plant Pollination Primer" (October/November 2014): There has been a lot of news recently about colony collapse disorder and the threat of poor harvests as a result of it. Perhaps monoculture farming techniques are to blame. Growers of single-crop fields or orchards should consider planting shelterbelts that attract, protect and nourish native pollinators.

*John Foster
Minneapolis, Minnesota*

Concerned in Vermont

While reading "Go, Vermont!" (Green Gazette, October/November 2014), I became frustrated. I'm a resident Vermonter, and the things highlighted in the article are the kinds of things that are turning Vermont away from the simple dairy-farming state it used to be into one with a high-bureaucracy, anti-business climate. We average Joes who love living the homesteading lifestyle are left struggling in a stagnant economy.



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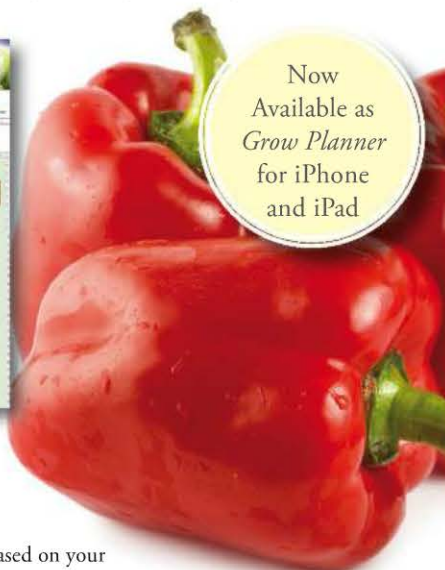
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Most upsetting was what sounded like a lobbying group (Vermonters for a Sustainable Population) that is working to find a way to shrink the state's population by 126,000 residents. In our small state, that's a ton of people. My family will probably be one of the ones that gets weeded out because of the lack of jobs, the constant leaps in taxes, and the fast-rising cost of living.

*Ben Olsen
Elmore, Vermont*

A Fan of Cam

I have been a longtime MOTHER EARTH NEWS subscriber. I enjoy reading the articles, cutting out all the projects I want to try, and then adding them to my 30-pound accordion folder. I also enjoy looking at the photos of farms and living off the land—I call this my “farm porn.”

I have read many books recommended by MOTHER EARTH NEWS, but one of my favorites that has stuck with me is *Thriving During Challenging Times* by Cam Mather. Once I started reading it, I couldn't put it down.

Thank you, MOTHER, for continuing to educate me. No matter how many years I have subscribed, I still learn something new with every issue, whether it's from an ad or from other readers sharing their experiences.

*Stephanie Young
Lexington, South Carolina*

You can get your own copy of Thriving During Challenging Times on Page 97. —MOTHER

A Note of Gratitude

For years, I have read your magazine and browsed through the articles umpteen times, studying and taking notes on how to have a better garden and save money. I even raised chickens according to what I discovered in MOTHER EARTH NEWS.

As long as I live, I will never ever be able to thank you enough for all the hard work that goes into making such a great source of information. I will forever be a subscriber to MOTHER EARTH NEWS.

*James Reynolds
La Porte, Indiana*

Finding Camaraderie at the MOTHER EARTH NEWS FAIR

We exhibited at our first MOTHER EARTH NEWS FAIR in Topeka, Kan., in October. Unlike many

of the other booths, the only thing we were selling was awareness, spreading the word about our ranch community for adults with intellectual disabilities. We were blown away by the number of people who stopped by our booth to talk to and encourage us.

We're working hard to become a more sustainable operation on our 410 acres, and we returned home with all kinds of ideas and resources. And do I need to add that we had the time of our lives? Thanks, MOTHER, for a great adventure in the heartland.

*Judy Horton
Elgin, Texas*

'If Only School Had Been That Enjoyable!'

What a great time we had attending the MOTHER EARTH NEWS FAIR in Kansas! We got a much-needed break from our hectic lives and actually got to do something as a couple, leaving our four wonderful children with grandma. Perhaps it was these almost honeymoon-like circumstances that made us so giddy, but I'm suspecting the FAIR contributed much to our happiness.

We spent two days meeting some amazing people and cramming our brains with new information. Oh, if only school had been that enjoyable! Is there any chance, in the future, that you would consider a FAIR venue a little farther south? We drove 8½ hours, from southeast Oklahoma, to attend.

*Jennifer Davis
Antlers, Oklahoma*

Jennifer, we continue to add locations for our FAIRS every year. In 2015, we'll be bringing the FAIR to Asheville, N.C.; Albany, Ore.; West Bend, Wis.; Seven Springs, Pa.; and Topeka, Kan. For event dates and much more information, go to www.MotherEarthNewsFair.com. Hope to see you again at a FAIR!—MOTHER

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I started a scientific controversy when I finally changed the properties of ordinary water into “MIRACLE WATER” by increasing the Hydrogen Bond Angle in ordinary water from 104 degrees to a measurable 114 degrees and maintained it! However, text books will tell you this is “IMPOSSIBLE” because like any substance, as a result of that change it's not water anymore, it's something else. But if you are a believer you know with God anything is possible!! Scientists have said for years that if anyone could do that it would “Cure Anything” and at 85, after being in this family business for 40 years, we have thousands of reports that it HAS!!

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grees after his name he needed a fold out calling card: “You have a scam artist advertising the impossible in your newspaper!!” which was followed by scientists from Lawrence Livermore and the Fort Detrick Biological and Cancer Institute. Spokes monitors advertisers for honesty to maintain the good name of the newspaper. Accordingly, he told him: “Call John and if you decide he's a scam artist, he will never advertise in this newspaper again!” After calling me and buying our E5 machine, he laughingly told Jon: “I am embarrassed to say John HAS CHANGED THE HYDROGEN BOND ANGLE in water and I wish I owned his patents!” Since that time we have sold hundreds of machines to these scientists. God proved with his infinite wisdom that I was right and the textbooks were WRONG! Join us! Visit www.Johnellis.com/measure

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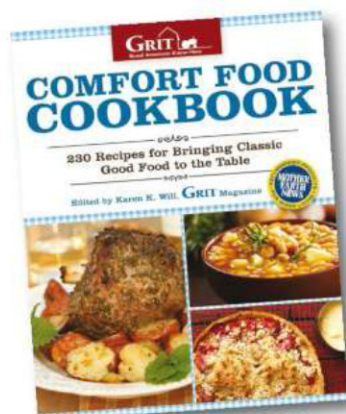
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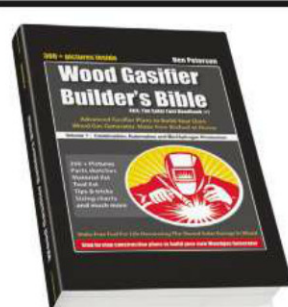
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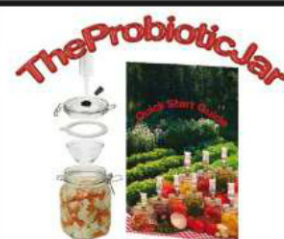
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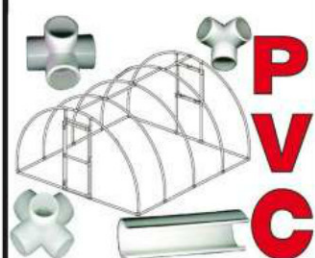
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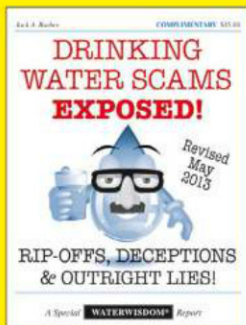
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